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3dcreative

Issue 084 August 2012

Luo Qisheng

3D Character Artist

Gallery

Gallery - 10 of the best images from around the world!

Bagpiper

Project Overview by Oleg Nikolov

Cover image by Oleg Nikolov

In this month's issue we look at the creation of a weird yet wonderful creature, a droid which is set to pleasure, and a couple of older guys get dressed for the occasion.

THE CHARACTER COLLECTION

The Submarine Pen

Diving in to chapter two, **Andrew Finch** continues his eight part tutorial series by showing how to turn your whites boxes to custom meshes.

Guide to FX - Particles & Dynamics

All the parts are falling in to place as **Matt Chandler** (3dsmax) and **Mike Zugschwert** (Maya) show us how to animate leaves dropping from a tree.

Character Production

Rodrigue Pralier (3dsmax) and **Anto Juricic** (Maya) will this month focus on hair and clothing as our character series moves towards completion .

Editorial

Hello and welcome to the August issue of 3DCreative. As the world focuses on the 2012 Olympic Games currently taking place in London, we proudly present a magazine bursting with gold medal-worthy tutorials that will help you develop your own skills and techniques.

We'll start by considering the fantastic image that graces the cover of this month's issue, which was created by the talented Oleg Nikolov. References and a solid design are always important when it comes to fantasy creatures and Oleg explains how his design concept for Bagpiper was influenced by Bulgarian folklore, while also covering how he used ZBrush extensively to model and pose his mystical character.

We continue the fascinating FX, Particles and Dynamics series in this issue as our industry professionals talk us through how to animate leaves falling from the tree. Matt Chandler is our instructor in 3ds Max while Mike Zugsschwert leads the way in Maya.

Our Building Droids series is an invaluable source of tips and tricks, and this month is no exception as Fábio M. Silva shows us how he turned a cool concept of a pleasure droid into a cool 3D model using 3ds Max. Fabio kindly shares his step-by-step approach to modeling the droid and talks us through how to create each part using simple modeling tools and TurboSmooth.

The Unreal Games Engine plays a huge part in the games industry and is capable of outstanding results. We hope that you are enjoying Andrew Finch's new amazing tutorial and have all started to create your own games level. In this issue Andrew talks us through how to make and place white boxes in UDK to create the layout of your level.

We also have the penultimate chapter of our Character Production series, where our amazingly talented artists talk us through the creation of the one of the most challenging parts of any character: the hair! Rodrigue Pralier continues to use 3ds Max and Anto Juricic demonstrates the process using Maya.

I am sure that you will agree that this is another amazing issue, full to the brim with must-have tutorials, but as well as tutorials we also have a stunning gallery featuring work by Renato Gonzalez Aguilante, Baolong Zhang and Daniil Alikov, as well as an interview with the brilliant character artist Luo Qisheng for your enjoyment. Have fun!

Contents

What's in this month?

Editor	Layout	Content	Proofing
Simon Morse	Matthew Lewis Layla Khani	Simon Morse Richard Tilbury	Jo Hargreaves
Lead Designer	Az Pishneshin	Jessica Serjent-Tipping	**Marketing**
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Free Stuff!

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Image by Tom Isaksen

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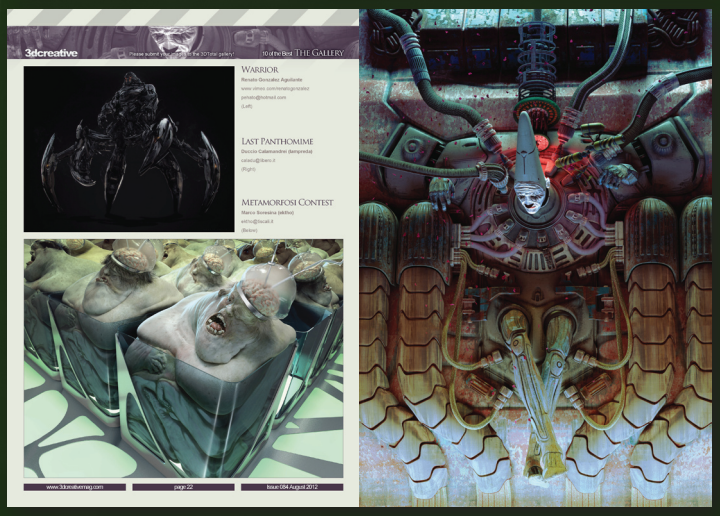

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1. Open the magazine in Reader;
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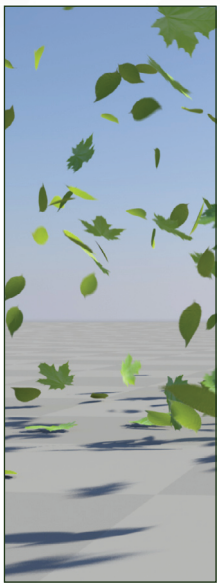
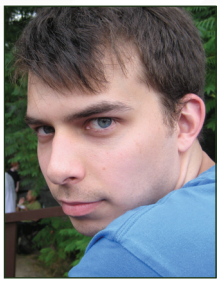
That's it!

Contributing Artists

Every month artists from around the world contribute to 3DCreative, and you can find out a little more about them right here! If you'd like to get involved in the 3DCreative magazine, please contact: simon@3dtotal.com



Mike Zugschwert



Mike Zugschwert is an FX Artist who works in Realflow, Maya, and 3DS Max. He was the Lead FX Artist for the short film Azureus Rising and now applies his talents to television commercials. He is currently working at Make in Minneapolis, MN.

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Rodrigue Pralier

Rodrigue Pralier is the lead Character artist at Bioware Montreal Quebec. After working in the games industry for nearly a decade he has recently shipped the highly anticipated game Mass Effect 3 and has previously worked on other games like Army Of Two:40th day.

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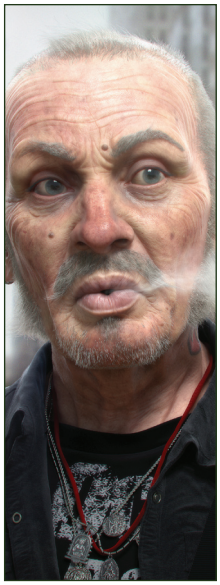

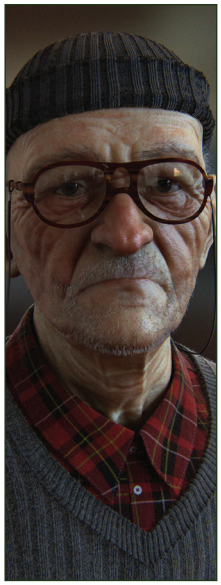

Anto Juricic

Anto Juricic Toni is a character artist and he currently lives in Bosnia and Herzegovina, where he works at Primetime Studio as a modeler and texture artist on animated features. Along with his passion for creating CG characters he also enjoys teaching others and sharing his techniques through many online tutorials and publications.

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Oleg Nikolov

Oleg Nikolov is a 3d generalist/ compositing artist working mainly in advertising, but also in the game and film industry. Planning to buy a twelve string guitar and a few islands, he views the creative process as an adventure or simply playing.

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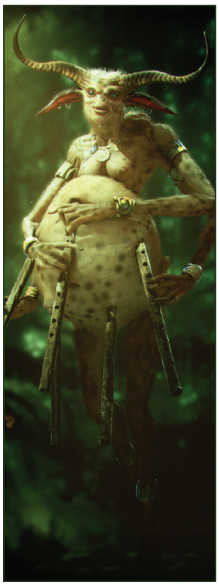

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We are always looking for tutorial artists, gallery submissions, potential interviewees, 'making of' writers, and more. For more information, please send a link to your portfolio, or send examples, to: simon@3dtotal.com


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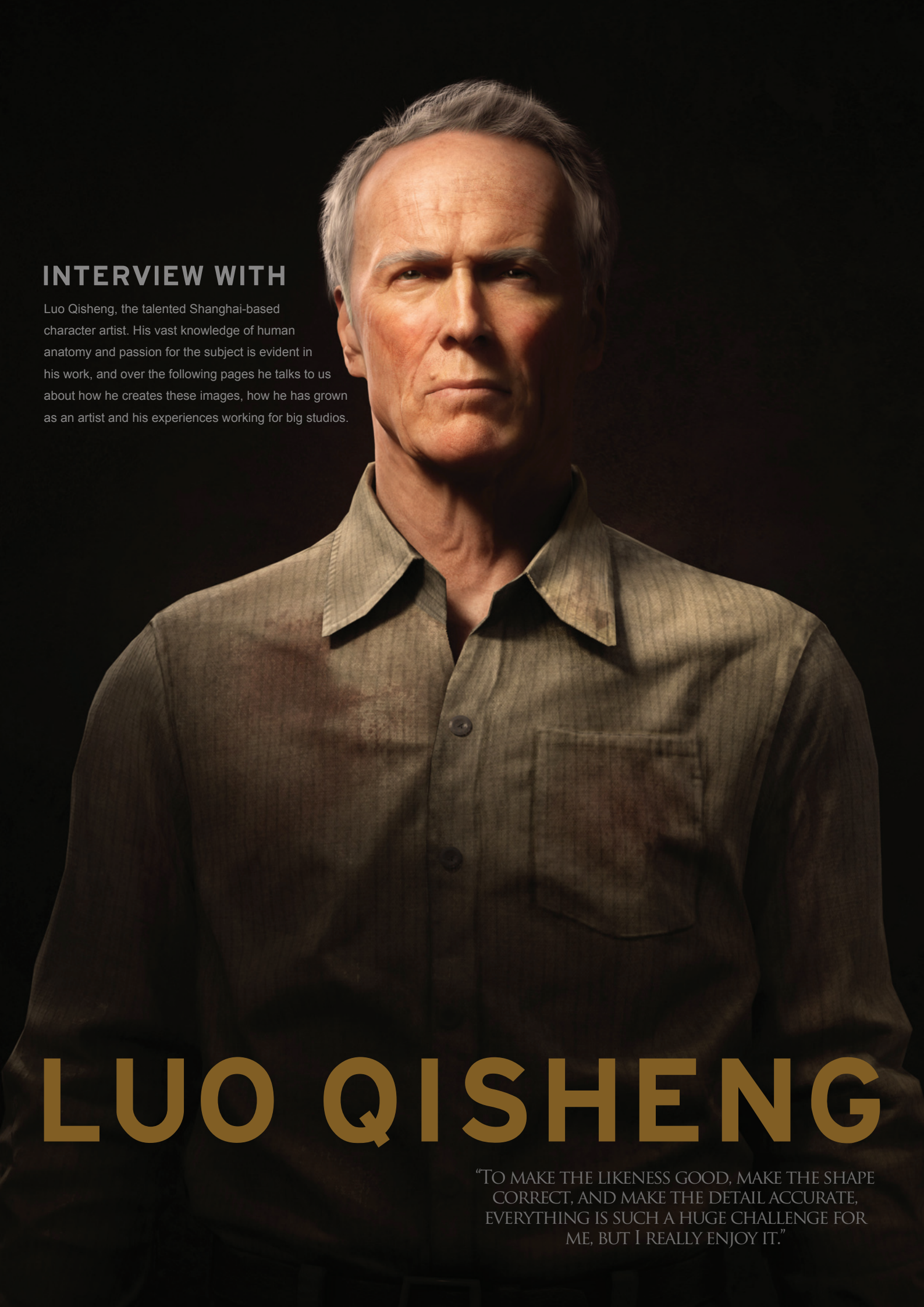


INTERVIEW WITH

Luo Qisheng, the talented Shanghai-based character artist. His vast knowledge of human anatomy and passion for the subject is evident in his work, and over the following pages he talks to us about how he creates these images, how he has grown as an artist and his experiences working for big studios.

LUO QISHENG

"To make the likeness good, make the shape correct, and make the detail accurate, everything is such a huge challenge for me, but I really enjoy it."

Hi Luo, can you tell us what shaped you into the artist we know today? Was there anything in particular that brought you closer to your current field of work; childhood stories, books, people, culture etc?

Before I chose CG as my real job, I was just a poor college student who was trying to learn something that would be useful when it came to job hunting. Actually, my major in college was Economics, but I really did not like it. Why did I choose Economics as my major? Who knows! In China not every student knows what they really want to do when they are young. After two years of boring college life, I became aware that I was wasting my time; it was not the stuff I wanted to learn and I needed to change.

"BUT ART NEVER LEFT ME AND IN COLLEGE I FINALLY GOT ENOUGH FREE TIME TO DO IT"

Then I turned to art. When I was child, I used to learn drawing in school, and I found I really loved it, but unfortunately I didn't have a lot of spare time for art because there was a really heavy homework load for us to do. But art never left me and in college I finally got enough free time to do it. I learnt by myself, painting in my sketch books every day. At that time Photoshop was popular in my country, and when I got the chance to approach digital painting I found I really had a passion for it.

In 2006 I found some cool sites and forums on the internet, such as **www.cgtalk.com** and **www.3dtotal.com**, and I saw there were so many great images out there. All the 3D images I saw particularly impressed me and I really came to love the work of great artists such as Oliver Ponsonnet, Steven Stahlberg, Soa Lee and the Chinese artist Muyu. I found I really wanted to be one of them and so decided that 3D character modeling was the direction I wanted to take.

After teaching myself for one year, I got a job in Shanghai as an junior 3D artist at Pearl Digital Entertainment, an outsourcing game company, I stayed there for two years and I have to say I really learnt a lot in that company; it gave me the chance to work on some AAA level games, such as *Heavy Rain*, *UFC2009* and *EVE*. I did lots of characters and some vehicles, both modeling and texturing. I also kept learning in my spare time after work, doing some personal projects to improve my modeling skills and some 3D technique things.

"The first thing I need to do is to make the foundation strong, have the basic skills of modeling, a good understanding of the human anatomy."

In 2009, I got an offer from another game company, Virtuos, for a position as a character artist. There I got to work on some really exciting games such as EA's *MMA*, Naughty Dog's *Uncharted 3,* Sony's *Killzone*, and even a movie project in *Transformers 3*. I did lots of photorealistic head modeling and costume modeling for these projects.

So far, I'm still enjoying my life here, doing some personal work for fun and watching exciting movies and sports.

What inspires your characters' expressions – is it the background story or the form itself?

Up until this point, and probably in the future too, all my work has been done for practice and study. I've always been a fan of those great traditional artists such as Michelangelo, Giovanni Lorenzo Bernini, Auguste Rodin, Houdon, and, of course, Rembrandt. My aim in this life is to one day be able to match the level of these masters in the digital medium (maybe this will never happen or it will happen one day in my next life).

The first thing I need to do is to make sure I have a strong foundation with basic modeling skills and a good understanding of the human anatomy, such as the accurate shape of the face and body, the rules of shaping cloth folds etc. When I want to make a new piece, I tend to make all these elements together.

Next I decide what kind of character I'm going to make. I usually get inspiration from movies; they always have a lot of classic characters that I'm interested in. A few of my favorites include *The Good, The Bad and The Ugly*, *The Godfather*, *Farewell My Concubine* and *Avatar*. I love making these characters in 3D, although I can't do all of them because I don't have that much time.

To make the likeness good, the shape correct, and the details accurate is such a huge challenge for me, but I really enjoy it. Most people probably think it's boring to make a single head in three days – how about making it for a month of more! – but for me, the structure of the human face is the most amazing thing in the world. How come subtle changes can make people look so different? What makes this guy look like a hero and that guy look evil? If I do ever get bored then I check out the masters' work to find the strength to continue, then pick up my Wacom and get back to work.

Over time and over a series of successful artworks are there any methods that technically prove worthy? Anything that is different from the way other people tend to work?

The method I use is pretty common. I mostly use ZBrush to sculpt a high res model as, for me, ZBrush is really cool and I always have a very free sculpting experience with it. I start by building a mesh with UVs in Maya and export it to ZBrush to have fun. From the main structure to subtle details, wrinkles and pore, everything is done in ZBrush and I enjoy this process very much.

Next I export some maps generated from ZBrush, like a Normal map and a Displacement map, as a starting point for painting textures; I then paint the textures in Photoshop and Mudbox.

I do all the shading work in Maya. For me this is a really boring and painful time, but I know I have to do it. I test the shader over and over again, until I get a nice look.

I used to use mental ray for lighting and rendering, but recently I've found V-Ray is really great. It has the SSS shader now, which is really important for character rendering, has powerful GI capability, and is really fast and easy to use.

For doing game models, I use Maya to retopologize the mesh to fit the polycount budget after the high poly sculpting is finished. Then I move to UV works and bake a couple of maps from the high res model, like a Normal map, AO map and Cavity map in Xnormal or Maya, before making textures in Photoshop and Mudbox. When I feel good about the final look of the model, I send it to the client to get some feedback. Basically that's all for my workflow.

Any chance we might see some of the work you've done professionally for game and film companies?

I'm not sure because of the NDA.

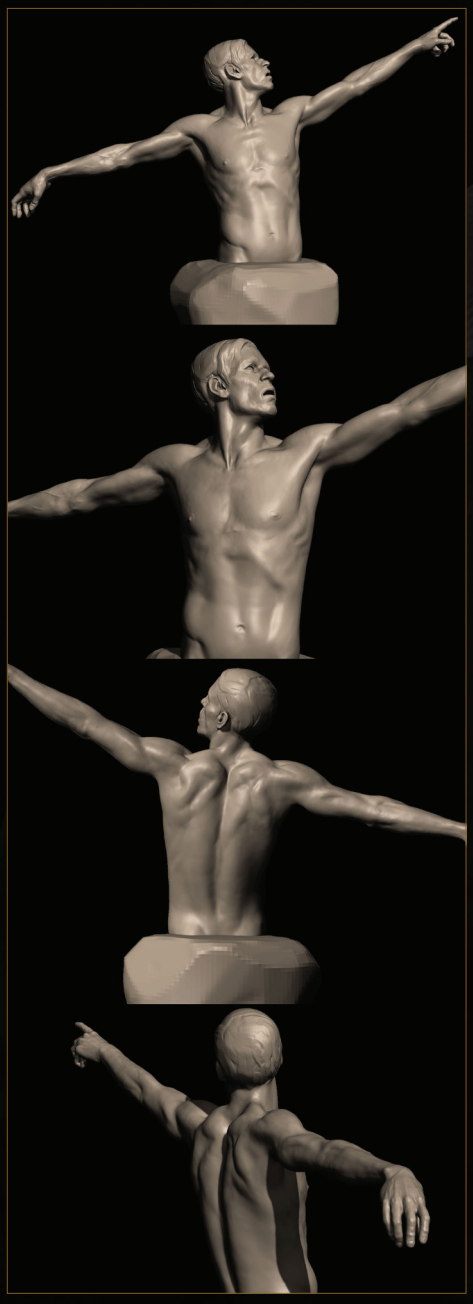
Ah I see. Can you perhaps tell us how working in these big studios has helped your art to develop or changed the way you work?

I think working in big studios has helped turn me into a professional artist. Being efficient, being better and never giving up – that's the spirit I've learned. When doing professional work, everything you do should make a client's idea

flow, make them happy and make the business continue. If you are fast, produce good quality work and never complain about the feedback then you can be successful in this field. Of course, there's a good workflow in place in big companies, which is very helpful.

How much does your professional work experience differ from your personal artwork? Which makes you more happy and relaxed, and why?

The difference is that professional work is all about making a client's idea come to life in 3D, and you do not have too much freedom to change it. There could be some design or style you don't like, but you have to do it and should execute it well. In one word, there isn't too much of "yourself" in professional work. Luckily the work clients send to me is always exciting, with a realistic style and cool design, which I like.



Having said that, when the schedule is tight, I might not have enough time to enjoy the work as I have to hurry it. For personal work, there is no dead line; you can do anything you like to do. Freedom is good, and makes me happy.

It's hard to tell the chronology of your characters, but there is an obvious difference between them, from form to expression and lighting etc. Is it me or do you like to challenge yourself when it comes time to create something new?

I like to challenge myself, of course, but in my work there's not really much that's new from piece to piece. For me, creating work is kind of like repeating yourself, but each time I try to find new ways to work so I can get more experience.

Before I create a new work, I might set a goal first and then select a subject. Once I feel I have achieved what I expected, I may set a new goal for the next work. I used to try to make my characters as realistic as possible, and make a very close likeness. After doing that for a while I found I preferred to bring a more artistic feel to my work, so the next time I tried to get more interesting expressions. Right now I'm learning how to make poses that tell a story. In the future, I may try to design some creatures, which is an area I have not set foot in yet.

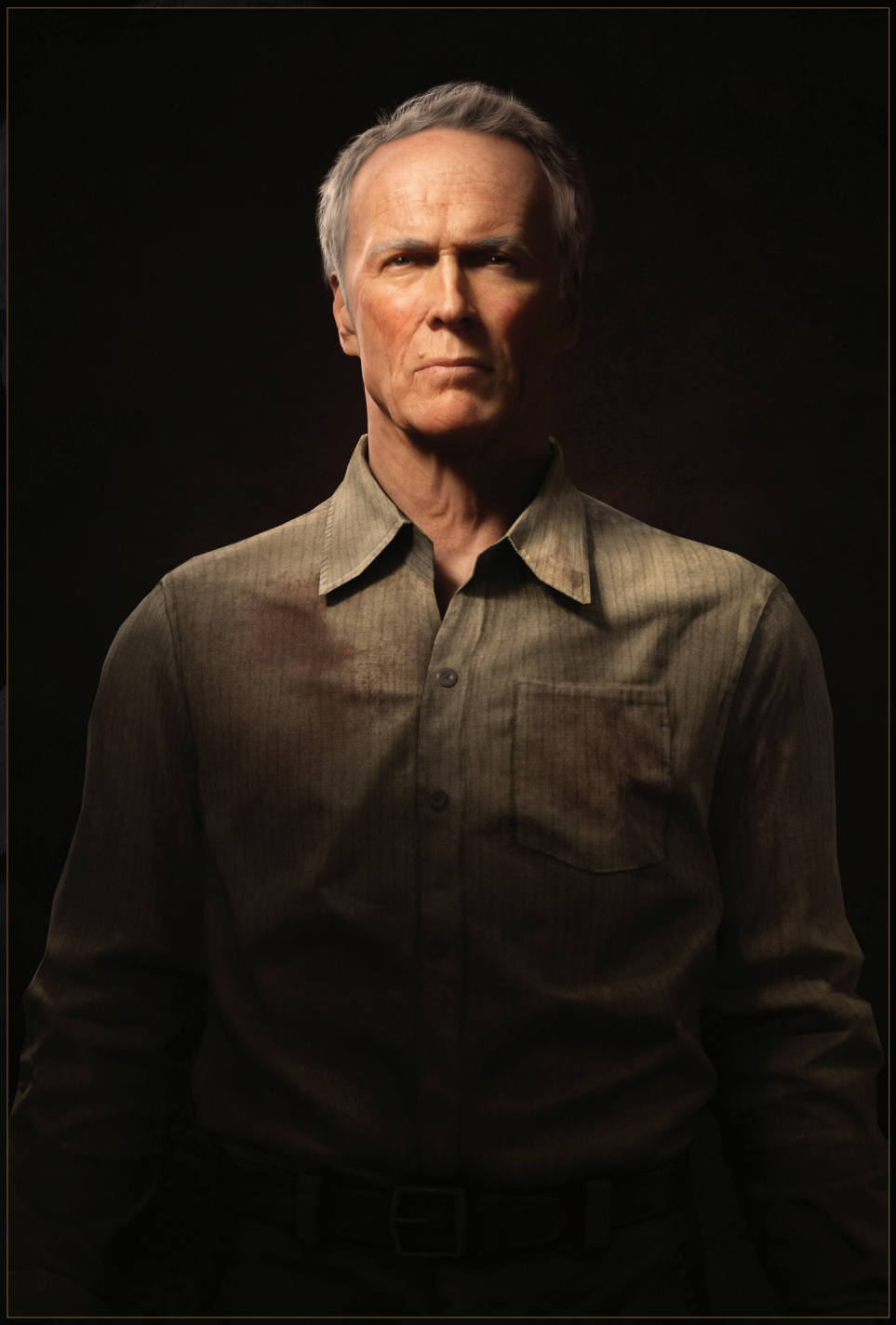
Could you estimate how much time you invest in a character and what part seems to take longer than the rest?

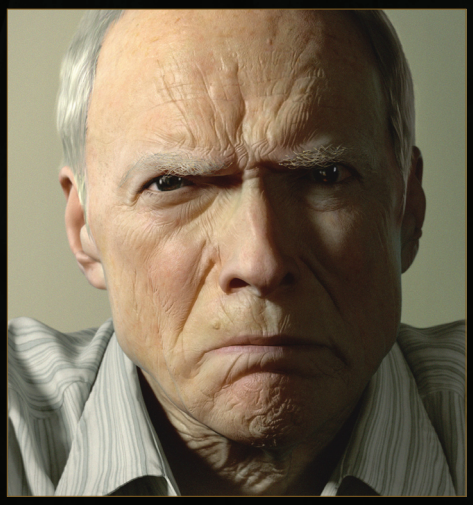
How much time for each one? It's really hard to calculate. Usually it's depends on how busy I am. The longest part is always sculpting the high res model; this can take from one month to one year, depending on the character. After I feel satisfied with the look of the model, I move on to the texturing and lighting.

For me I really don't care how much time I take on a model, I only care about the quality. If I don't like the look of model, I'd rather see it die on my computer or save its life by modifying it again and again until it has a good look. You know, when you check back on a piece after leaving it for a while you can always see new problems that you didn't spot before. Ignore the problems and leave them alone? I can't do that. If I didn't fix the problems, I would feel guilty. I suffer through fixing multiple problems, but it's worth it in the end. Once you've mastered the method of making a good quality image, you can make a second one a lot faster.

Ever thought about inorganic modeling, or enriching your models by adding them to an appropriate scene?

Yes, this is good point. I do consider making appropriate scenes for my characters sometimes; I think I will try it in my next piece. The reason I haven't tried it before is that I did not have any extra energy to do it; all I concentrated on was making a better model, which expended almost all of my energy. Until now I think I've been a little bit too satisfied with my sculpting skill; maybe it's the time to bring in more assets to decorate my characters and make a nice image.





Do you have any thoughts on your future? What's your next big step?

All I want is to keep learning new stuff and working hard. I do not have a good plan for my future now, but I think there will be big opportunities coming my way one day.

Thank you for sharing your views; we hope to see more of your artwork in the future!

Thank you for your interview and best wishes!

LUO QISHENG
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Interviewed by: Predrag Suka

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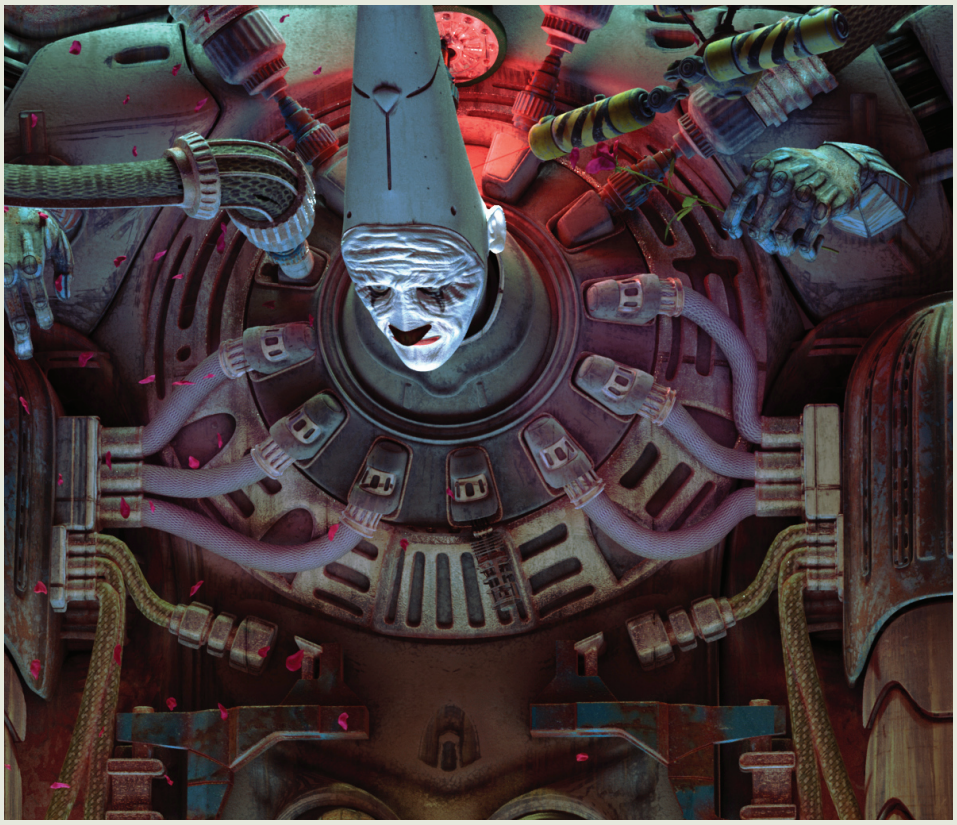

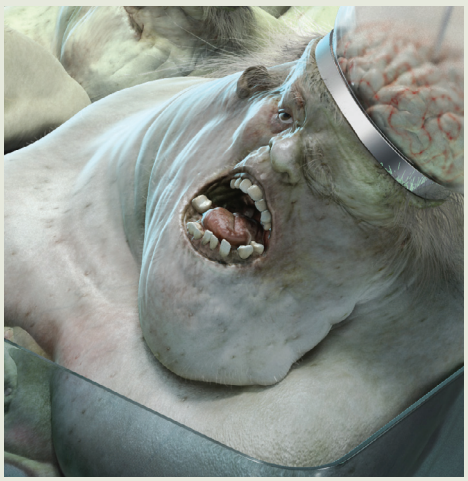

the GALLERY

This month we feature: Rashad Quli | Marco Soresina | Daniil Alikov | Duccio Calamandrei
Baolong Zhang | Renato Gonzalez Aguilante | Babak Bina | Tom Isaksen | Lorenzo Serran | Kleber Darcio

COLD MORNING!

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(Above)

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Eyes Wide Open

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Metamorfosi Contest

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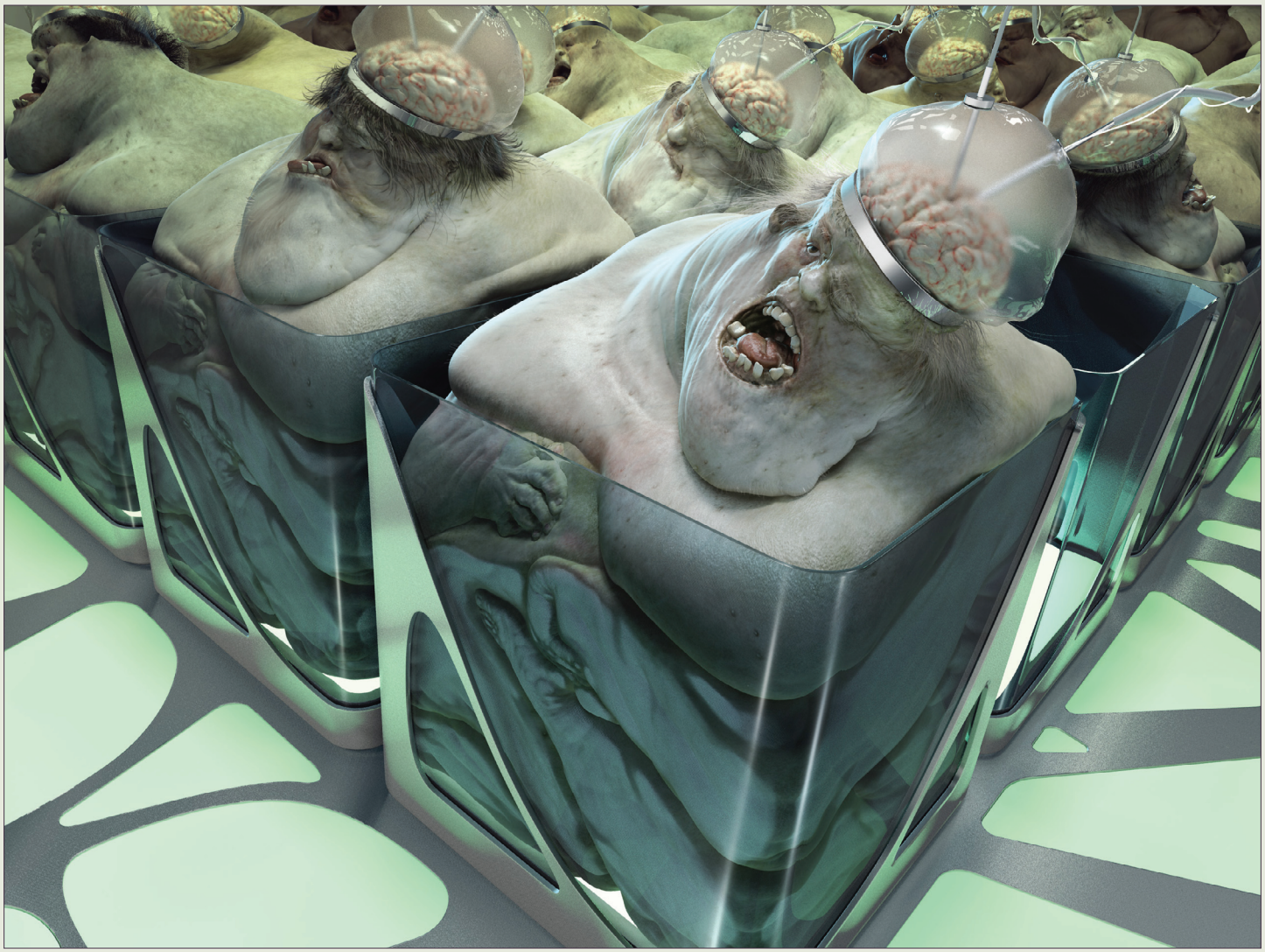
(Below)

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GUIDE TO FX -

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3DCreative are branching out from creating stills in this amazing tutorial series, which will be looking at how to set up FX and particle systems in 3ds Max and Maya. Our amazingly talented artists will tackle some of the most common and popular effects, and will show us how to set them up and manipulate them to match an environment of your choice.

3ds max

CHAPTER 05 LEAVES AND PETALS FALLING

CHAPTER 05 – LEAVES AND PETALS FALLING

Software used: 3ds Max

Adding falling leaves or petals to a 3D scene can add a great deal of atmosphere and depth to the shot.

Using Particle Flow and a number of standard Space Warp modifiers within 3ds Max, we will set up a simple falling leaves scene that could easily be adapted and revised to appear as falling petals or leaves on a much more windy day.

The final scene is included to open and examine should you have problems.

Start with a new 3ds Max scene. It is good practice to set your scene/3ds Max environment to your scene scale/unit setup of choice. This can often dramatically affect space warp settings and particle behaviors. In this tutorial, I am using the default Generic Units setting.

Start by defining your ground plane. Create a simple plane primitive to represent the ground. As our particle leaves fall they will detect a collision with the ground and settle on the surface.

Create a simple deflector and align it to the ground plane object, matching scale and position. Since our ground is a simple plane, we can use a simple plane deflector to calculate the collisions rather than the geometry.

Let's also create another object in the scene for the leaves to interact with. Create a sphere primitive and position it to your liking. We will also need to define a deflector for the sphere by creating an SDeflector. Align the position and scale of the SDeflector to the sphere. You may need to increase the SDeflector diameter slightly, so its boundary is just visible around the sphere geometry. This can be altered later as well, in case the particle collisions need adjusting (**Fig.01**).

Hit 6 to open up the Particle Flow view. Drag out a standard flow from the depot and within the viewports, position the Particle Flow display icon to somewhere above the ground plane. Our leaves/particles will be emitted from here and fall down to the ground whilst tumbling and twisting in the air.

Feel free to adjust the Emitter Icon shape to get a few different emission results. The particles are not doing anything interesting at the moment, so let's make some adjustments to the flow. It is good practice to name your Particle Flow and Particle Flow events that particles are passed into for clarity and ease of understanding at later dates. I have named mine "Leaves_petals_falling".

Delete the Speed operator. Adjust the Birth operator to Emit Start 0 and Stop to 30. The amount of leaves/petals can be adjusted at any time, so I have left it at the default of 200.

Select the Shape operator, change it to 2D and select Square. Simple planes will represent our falling leaves for the time being, allowing us to see their movements more clearly.

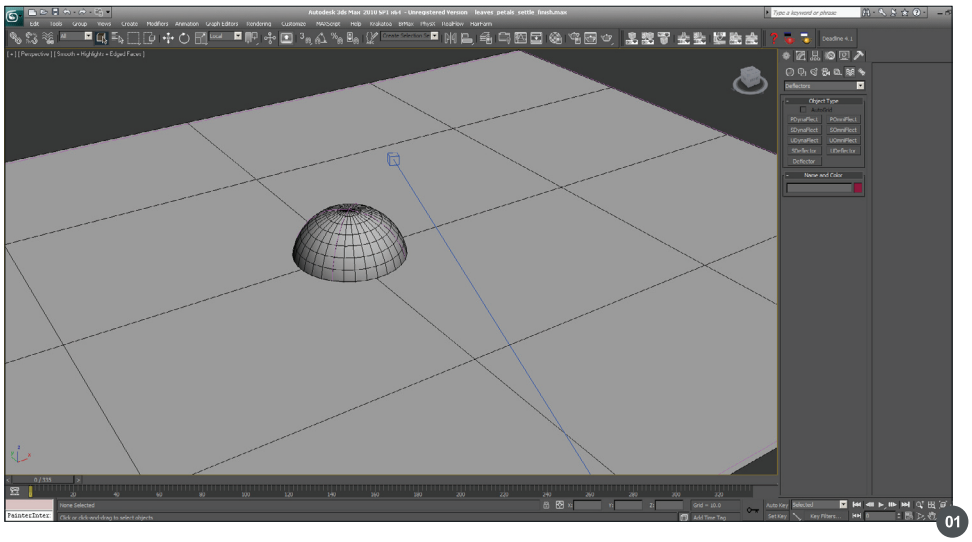
Let's create some forces to influence our particle leaves. Create a Forces operator and place it beneath the Position Icon operator in Particle Flow. Now let's create the Force space warps to add to the Particle Flow Force operator.

Create two Wind space warps and one Gravity warp. It's always a good idea to mix at least two Wind operators together to create more convincing movements and turbulence to drive particle motion.

Select the first wind and set its strength to 0. Under the Wind panel, adjust Turbulence to 0.15, Frequency to 1.18 and Scale to 0.05. These values can be sensitive at certain scene scales and produce vastly different results. You may need or want to adjust these to your own tastes later. Select the second wind. Set Strength to 0.09, Decay to 0.05, Turbulence to 0.21, Frequency to 1.18 and Scale to 0.17.

Now add the two winds to the Force operator within Particle Flow. If you scrub the timeline the particles blow around, twisting and turning, but we need to encourage a slight amount of direction with some gravity (**Fig.02**).

Select the gravity warp and change the strength to a small value like 0.02. Now add this also to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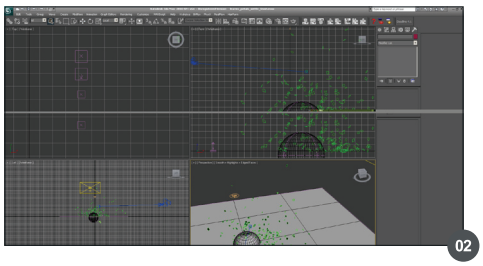
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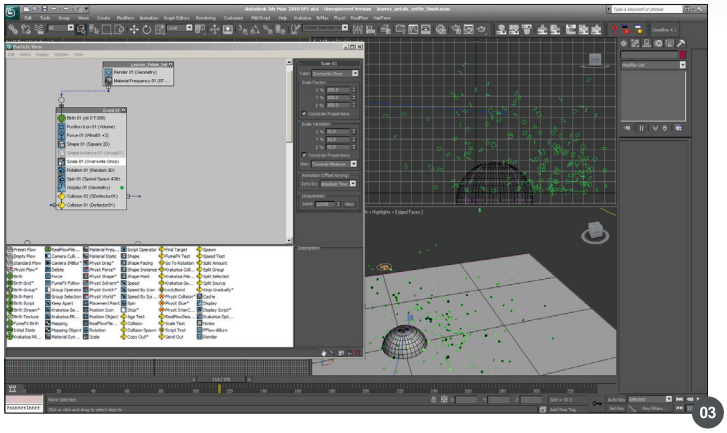
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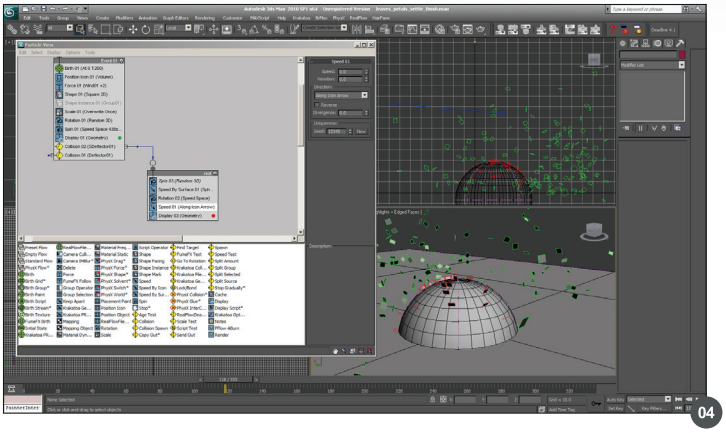

04

the Particle Flow Force operator and scrub the timeline to review the results.

Add a Rotation operator and set it to Random 3D. Next, add a Spin operator and change Spin Rate to around 430, with Variation of around 190.

Set the spin axis to Speed Space. This ensures the particles will spin on the relevant axis according to the speed of the particle direction; adding a more realistic and expected motion.

Add a scale event and adjust the Scale variation and Bias to your liking. This operator will be useful later to see the subtle scale differences between leaf sizes.

We now need to add Collision operators so that our leaf particles can see and collide with the ground place and sphere object. Add two collision events to the bottom of the Particle Flow. We could use just one collision event and add both deflectors to a single operator, but by using two we can create slightly different "resting" behaviors; one for the leaves that rest on the ground and the other for those that rest on the sphere (**Fig.03**).

Select the first Collision operator and add the SDeflector to its list of deflectors. Under Test true if Particle, change it to Collides and set Speed to Stop.

Create a new event for this collision event to pipe out into by dragging out a new Display event. Name this new event "rest", as these particles will be resting upon the sphere. Within this new event, create a Spin Operator and set its spinners to 0. This ensures that any spinning particle entering this event will stop spinning. Add a Speed by Surface below this and set it to Set Speed Once, with Speed around 4 and 0 Variation.

Add the sphere geometry to the Surface Geometry tab. Change the Direction tab to Surface Normals. This operator will influence the speed of the particles according to the Normals of the sphere geometry, softening the landing.

Beneath this add a Rotation and set it to Speed space and 90 on the Z axis. Finally, add a standard Speed operator and set it to zero. This zero speed event at the end of the flow will apply zero speed to the particles, freezing them in place as if they have settled upon the sphere. Scrub the timeline and notice some of the falling particles now come to rest upon the sphere whilst the remainder continue to fall/blow around (**Fig.04**).

Let's finish the Particle Flow tree by adding the ground collision object so the remaining leaves settle. Select the second Collision operator we created previously and under Deflectors, add the Deflector space warp we created earlier and aligned with the ground geometry. Under Test true if Particle, set Collides Speed to Stop.

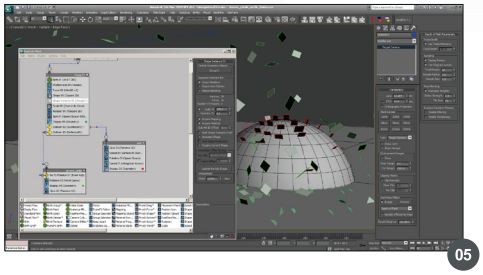
Create a new display operator and rename the new event containing it to "Ground_settle". Connect/wire the output of the second Collision operator to this new event. If we scrub the timeline now we can observe leaves colliding and stopping on the ground plane, however they are not lying correctly. We can improve the way they appear to settle by specifying a rotation orientation and adding a Go to Rotation event.

Add a Go to Rotation event and tick the Transition Period Ends box. Change Transition to Event Duration and set Duration to 4 with a variation of 2. Select Constant for the Target Rotation and tick Match Initial Spin with an Ease In value of 5.6. Tick Stop Spinning under Transition end. This operator will ease in to a specified rotation over four frames with a little variation.

Let's specify the settled target rotation by adding a Rotation operator and setting the orientation Matrix to World Space. The XYZ values will vary greatly on the geometry you are using/ instancing for the leaves and so you may need to alter the values in this operator until the leaves obtain a satisfactory resting position. In this case, X is -40, Y is -17 and Z is 0.5.

Lastly, add a Spin operator and set all values to zero (or you could drag and instance the Spin operator from the sphere resting event).

Reviewing the scene we can see that the particles fall/blow in the wind and settle on both the ground and sphere object. Try adjusting the wind space warps and gravity to obtain different results (**Fig.05**) (**Movie 1**).



Lastly, we need to instance some appropriate leaf geometry to replace the simple squares. Model some simple leaf shapes or merge in the leaf geometry from the example file to use in your scene. Make a few variations in shape and group them together.

Back in the Particle Flow tree, add a Shape Instance operator to the main emission event and select the group of leaf geometry, enabling Group Members and Acquire Materials if you have created a leaf texture on your models. See the **Movie 2** for a simple render of the resulting particle setup.

Such a particle setup can easily be revised and altered to include more leaves, more variations, and more wind or petal geometry with less gravity to create a fluttering effect whilst falling. You could also add subtle secondary movement/rippling to the leaf geometry by applying Phasing Noise modifiers and setting the Instanced Geometry modifier to use animated geometry.

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GUIDE TO FX - PARTICLES & DYNAMICS

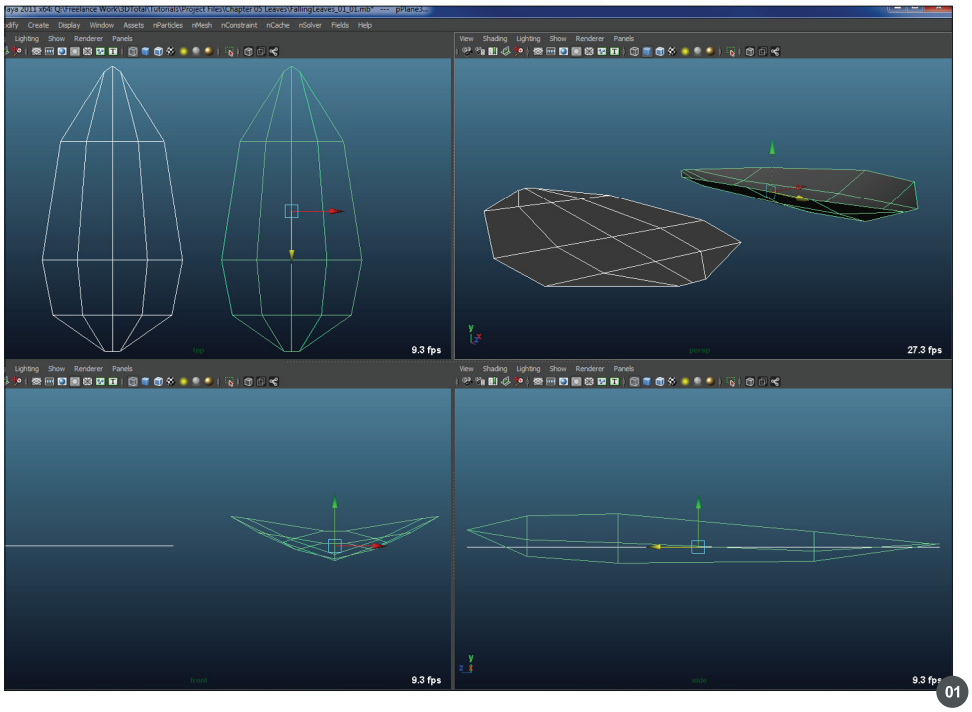
3DCreative are branching out from creating stills in this amazing tutorial series, which will be looking at how to set up FX and particle systems in 3ds Max and Maya. Our amazingly talented artists will tackle some of the most common and popular effects, and will show us how to set them up and manipulate them to match an environment of your choice.

CHAPTER 05 **LEAVES AND PETALS FALLING**

CHAPTER 05 – LEAVES AND PETALS FALLING

Software used: Maya

This chapter is going to focus on creating the effect of falling leaves or petals. If you watch the movement of falling leaves, they tend to go sideways instead of remaining flat and falling straight down. It is possible to achieve this effect using particles with some scripting, by calculating the velocity vector and adding an opposing vector based on the difference from the normal vector, but there is an easier way that requires no scripting at all.

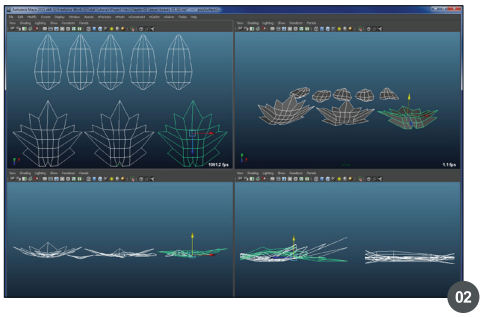


01

Maya nCloth has air resistance built into the nucleus solver for use in cloth simulations and we can use that solver to handle all of our leaves as well. We can start by creating the shape of our leaf. The shape has a very significant effect on the final simulation. In **Fig.01** you can see that both pieces of geometry are similar, with the only difference being the curvature of the surface.

In **Movie 1** both objects have identical simulation settings, but the curved object has a much more desirable behavior than the flat object. I am going to start by making a few different shaped leaves, so that my leaves don't all have the same behavior. You can see in **Fig.02** that I now have five oval-shaped leaves, and three maple-shaped leaves. Now we can move on to the simulation.

When simulating cloth, each piece of geometry gets an nCloth shape added to it. This means that each piece of geometry will have its own settings for mass, bend resistance, drag, and all the other nCloth attributes. Since I want all of my leaves to have the same properties, other than their shape, I am going to combine all of the geometry into one object and then make that object an nCloth shape. That way I can change the properties in one place, and they will still move independently because they are not directly connected. There are only a few properties that will not behave as we like when we do it this way, which I will mention as I discuss the nCloth settings.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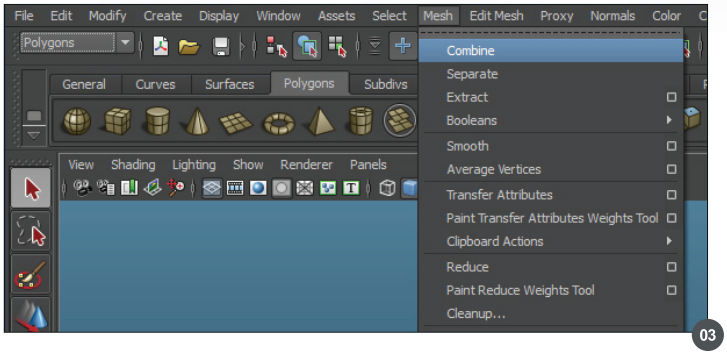
I will be coming back and making duplicates of my leaves once we figure out the simulation settings we want, so I don't want to lose the original geometry when I combine them all together. To make sure this happens, I will make



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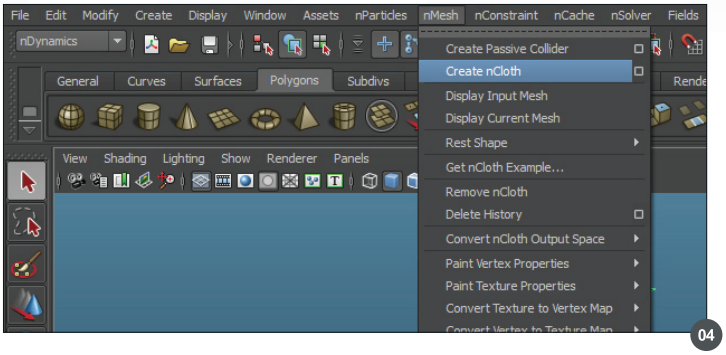


04

duplicates of all my leaves, hide the originals, and then combine all the duplicates using Mesh > Combine in the Polygons menu set (**Fig.03**).

Then I place the newly combined object well above the grid to give it some space to fall and add an nCloth shape to the object using nMesh > Create nCloth in the nDynamics menu set (**Fig.04**)

When you create nCloth, an nClothShape will be added to your object as well as a nucleus solver. The nClothShape is where all of your object properties are set for the simulation and the nucleus solver is where the world settings like gravity and ground plane are set. By default the ground plane is turned off; check the box Use Plane to turn it on and turn the friction up to 1 so the leaves don't slide around. If you play back your simulation now, your leaves should fall straight down, hit the ground and depending on the geometry they might fold up on themselves. The default nClothShape settings make the leaves behave like cloth, but we will want to change a few settings to get more leaf-like behavior.

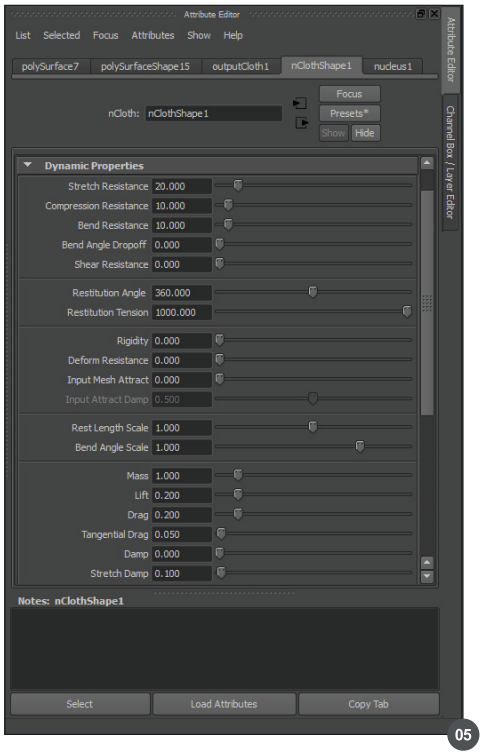
The attributes that we need to look at are all under Dynamic Properties. The first thing we want to look at is Bend Resistance. This will help keep each leaf from folding in on itself as they fall. I set mine to 10 and the default values for Stretch and Compression resistance will work fine.

The next attribute to look at is Rigidity. This value will also help the leaves to hold their shape, but in our case, it won't help. This is one of the attributes that doesn't work with our method of combining multiple objects into one for simulation. If you turn Rigidity up, the leaves will do a great job of maintaining their original shape, but they also maintain the original positions relative to each other. Rigidity takes the entire shape into account so it won't work for us. Deform Resistance is the other attribute that takes the whole shape into account and will not work in this situation.

Now we have to do something about the speed at which the leaves fall. Lift, Drag and Tangential Drag are very import attributes for creating the behavior we are looking for. Drag is the amount of resistance the air puts onto the geometry. Tangential Drag is the ratio of the drag that gets applied to the tangent of the surface normal. Tangential Drag set to 1 will make drag equal across the entire object. Set to 0 it will make the drag only affect the object in the direction of the surface normal, allowing the leaf to slip sideways through the air.

Lift is the force that causes the leaf to lift into the air as it travels sideways. Without lift, the leaves will still tumble as they fall from the drag, but never swoop back up into the air. Also, to have the leaves start with a bit more motion, I add a volume axis field with some turbulence. The values I end up using can be seen in **Fig.05** and the simulation can be seen in **Movie 2**.

I would like to use all of the leaves in my final simulation, but I would like to see a lot more of them. So now it is time to go back to the original geometry that was hidden, and make a bunch more duplicates. Also, this is the time that you



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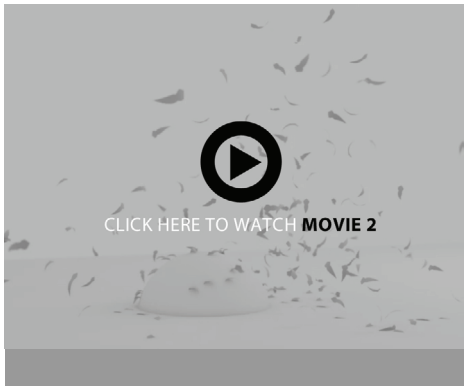
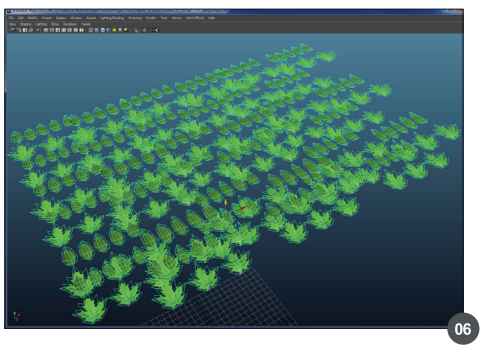


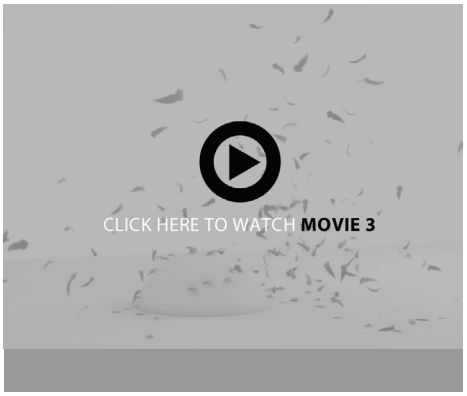


06

would want to make sure you have UVs laid out for your leaves, because it will be much more difficult when they all get combined into a single object.

Once you have all the leaves you want (**Fig.06**), repeat the steps we went through for the text. Create nCloth, enable the floor plane in the nucleus solver, and set all of the nClothShape

07



attributes. When you create the nCloth, your object will lose its current shader, but your UVs are maintained, so you just need to re-apply it to the object. If you have leaves with different shaders you will have to select by face and apply the shader that way (**Movie 3**).

You can see the final outcome in **Fig.07** and **Movie 4**.

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03
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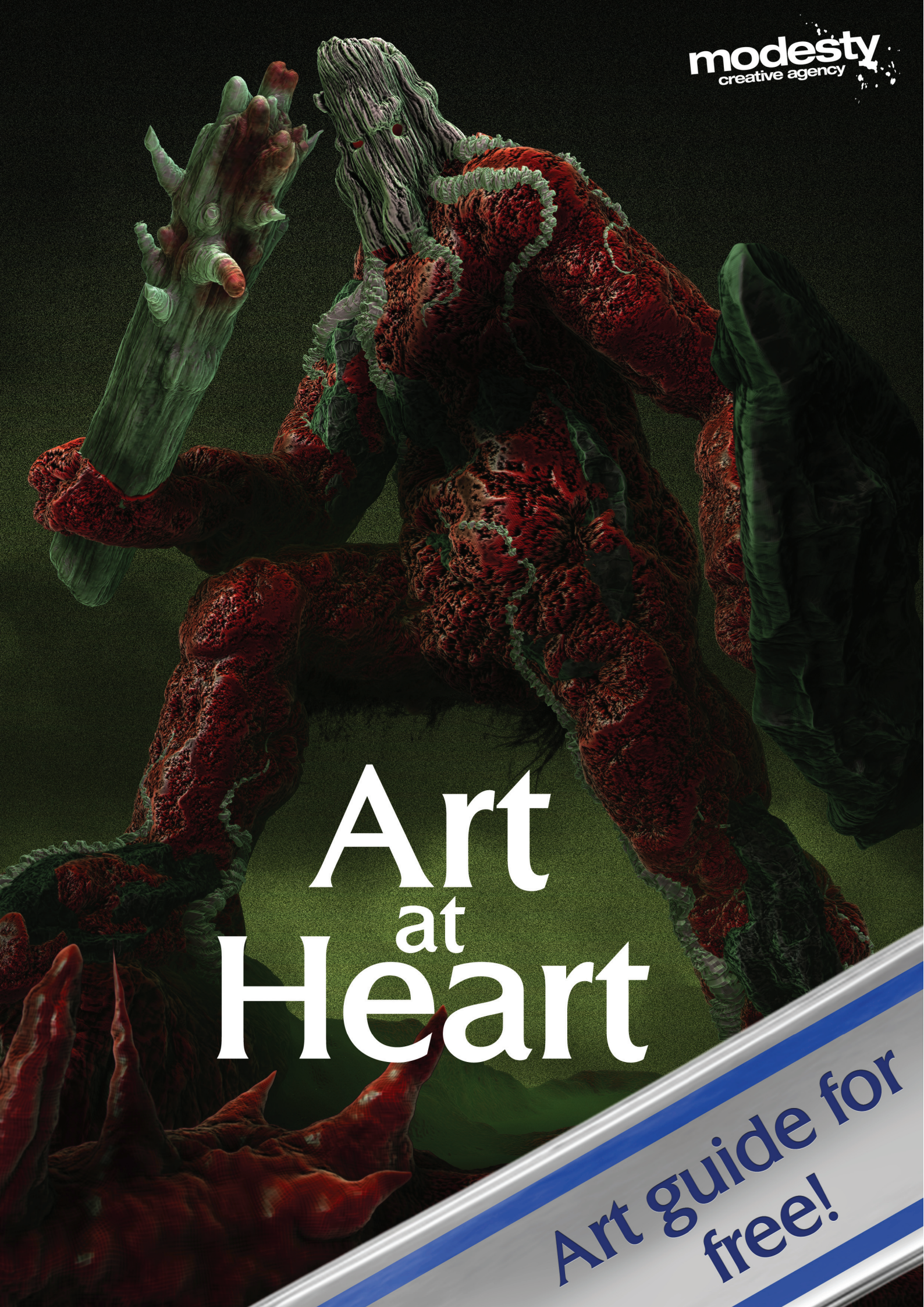
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BUILDING DROIDS

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Characters are, of course, a popular subject for CG artists. However in this series we will be approaching creating characters in a slightly different way. Each of our amazingly talented artists will be provided with a 2D concept and technical drawing of a cool, sci-fi droid. They will then show us how to turn this 2D information into an accurate and exciting 3D model. Many techniques and approaches will be used throughout the series, which will provide all of us with a great opportunity to develop our own 3D skills.

PLEASURE DROID

CHAPTER 05 – PLEASURE DROID

Software used: 3ds Max

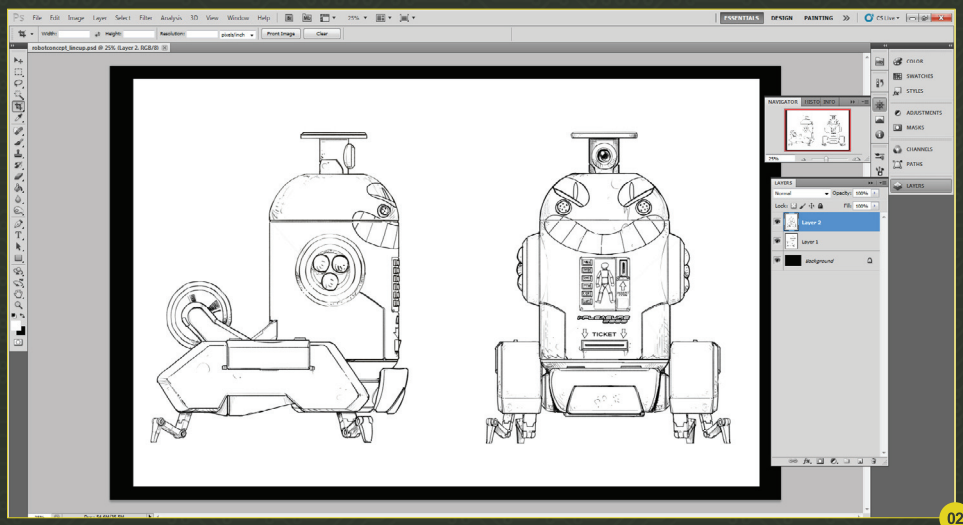
Hello fellow readers! Not so long after my work, *Centurion Alien Tech*, was featured in the 3DTotal gallery, I bring you a new robot and a tutorial on how to create this droid for 3DTotal's Building Droids series.

Before we begin, it would be wise to check the concept image carefully, and try to gather as much information as possible from it to avoid any extra work or mistakes (**Fig.01**).

What we're looking to understand from the concept is the shape of the droid; what parts are actually modeled or painted, and which are rounded or flat surfaces. From the start I can see that the eyes and mouth of the robot are stickers glued onto the metallic surface (you can see the paint underneath the ragged stickers), so that means we'll leave the eyes and the mouth to the texturing phase (**Fig.02**).

The next step is to check our concept line art. We have an ortho of front and side views of the robot in black and white on paper (you can download all the resources for this tutorial from the link on the cover). I am going to bring it into Photoshop and use my lines trick to check if they line up nicely before we bring it to 3ds Max (**Fig.03**).

01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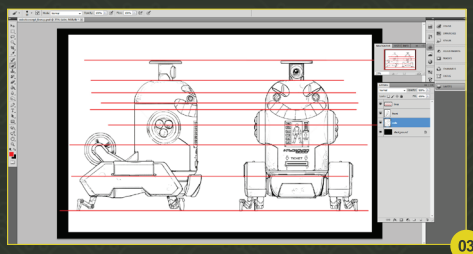
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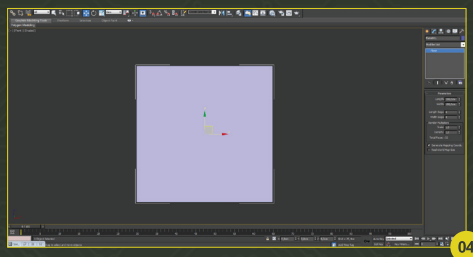
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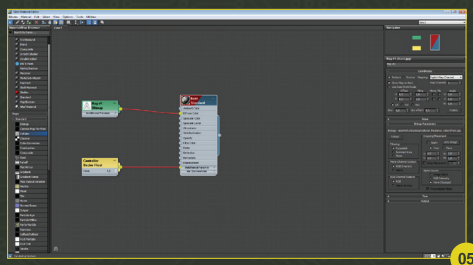
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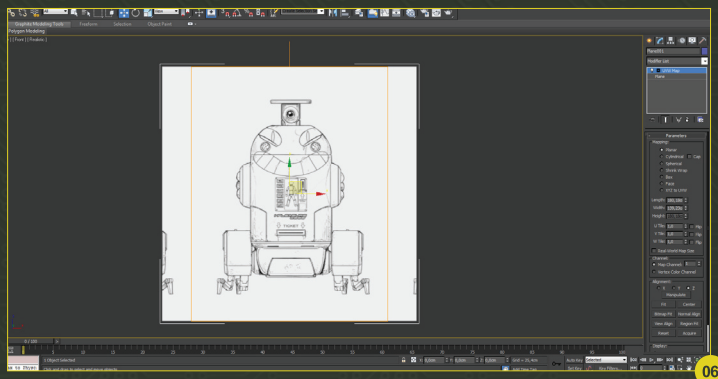
Okay, right off the bat before we even jump into modeling, I'd like to encourage you to spend some time customizing your UI and hotkeys a little bit to make sure you improve your modeling speed. Once, I even bought a special keyboard with 30+ plus programmable keys to ensure that I had enough keys for all my shortcuts (basically I had all the functions I needed in hotkeys).

Another thing I would advise is to force yourself to model with a Wacom tablet. I was completely against it for two years, but now I can't live without it. It really works for me! I use it for everything, including just using Windows. Okay, enough rambling, let's open Max!

Ensure you're in the front viewport, and that you're working with centimeters, and create a simple plane in the center of the world (XYZ, 0,0,0). Let's give it a size of 180cm, which will be the overall size of our robot. He is going to be a tad smaller. Also make sure you change the plane segments to 1 x 1 (instead of the default 4 x 4) (**Fig.04**).

Press the M key to open the Material Editor. Create a new standard material, and in the diffuse plugin bitmap, choose the front view image. Assign this material to the plane and select Toggle Display. You should be able to see the concept in the plane. Also, in the bitmap options, uncheck the tiling for U and V (**Fig.05**).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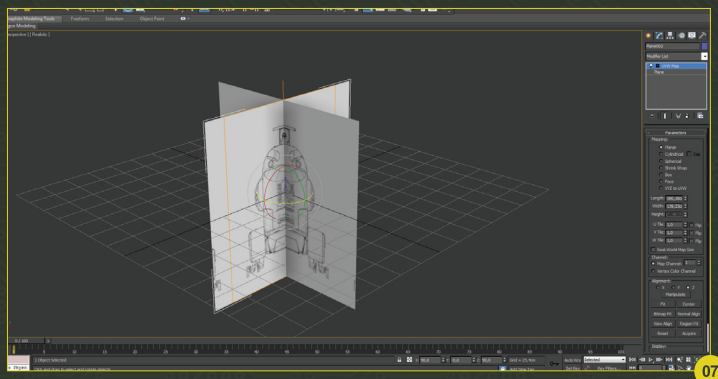
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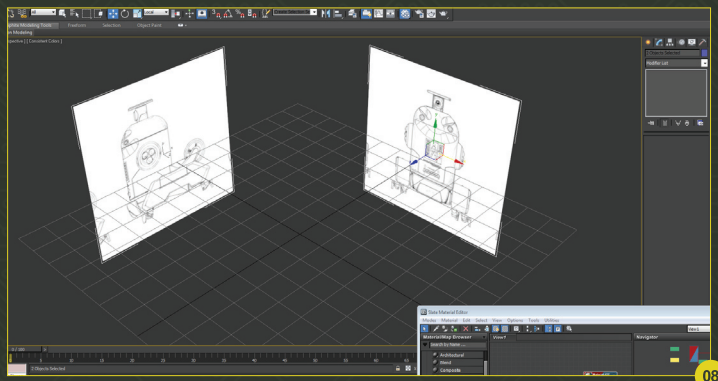
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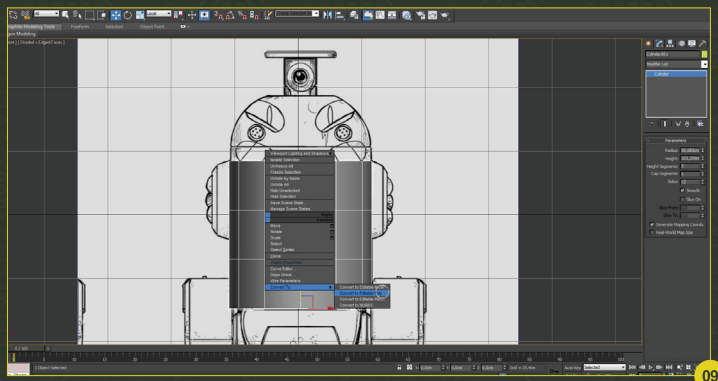
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In the main UI window, with the plane still selected, choose the Modify rollout and create a new UWV map modifier from the list. Select the option Bitmap Fit and again, select the same concept image (**Fig.06**).

Next, duplicate the plane and rotate it 90 degrees (**Fig.07**). Make sure you uncheck Backface Culling in the object properties, so each time you press L on the keyboard you can see your reference image.

Let's repeat the step where we created the material. Make a new one, and instead of choosing the front image, this time chose the side one (**Fig.08**).

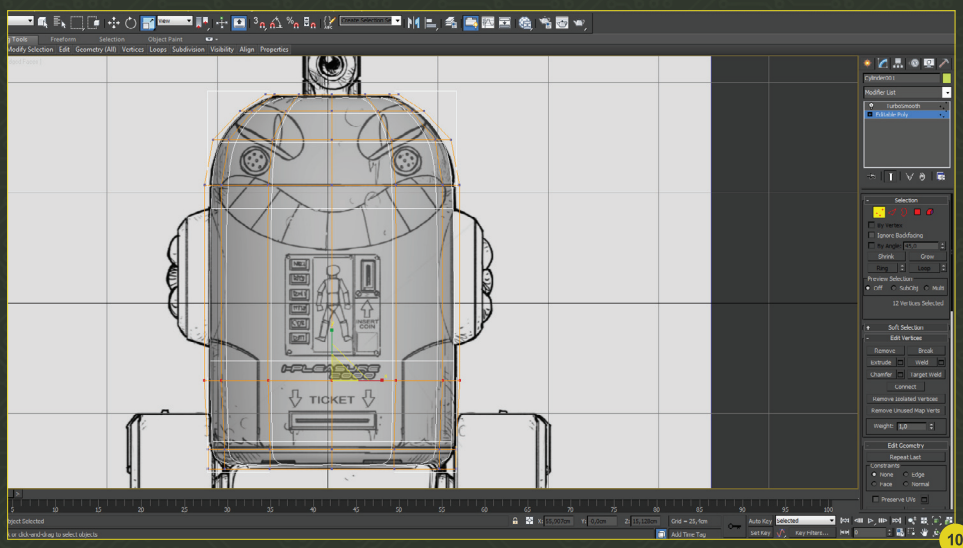
Note: You can Shift + move your selected nodes in the Material Editor. It's an awesome feature, so make sure you make good use of it!

Create a cylinder on 0, 0, 0, and give it a usable poly count (not too dense, just enough to keep it round when you smooth it afterwards). In my case I have used 3 for Height segments, 1 for Cap, and for Sides I've chosen 12. Also convert the cylinder primitive into an Editable polymesh (**Fig.09**).

Okay, so now we have our base mesh started. If you haven't noticed, the first shape kind of matches the main body (and the most important one in this case to start from) of the robot. So we will go from here, shaping it to match the drawing in the background.

The first thing we want to do is add a TurboSmooth in the modifier stack. Turn it on and off to see how much the cylinder changes. Leave it on for now and choose the lower level (Edit Poly). Now, slice the mesh where you think you need more detail and try to move points to match the drawing.

In this situation, you want to keep things as symmetrical as possible (although you can add a modifier for that in the future) so I'd advise you to move points in a series of rows, and if you need to make them thinner or fatter, use the Scale tool in the X axis. This way you won't change the shape of the mesh in the side view by accident (the object is cylindrical so use it with care). Cylinders are very challenging and other round surfaces are too. Balance is very important, so keep watching your mesh from different angles to ensure everything is okay (**Fig.10**). Check the side view and adjust accordingly.



10

I have added another edge loop to make the mesh tighter on the top (**Fig.11**).

Check it from other angles and adjust it to maintain the cylindrical shape (**Fig.12**).

Okay, so now that we have the main shape matching the form of the drawing, we will hide it for now and create another one of the main shapes. Basically, I want to get the big forms right first – the silhouetting, so to speak – before I go into any other details. Create a box and match it to the drawing from both views (**Fig.13**).

Select the faces and start extruding accordingly. Also move points as you need to. Do not worry too much about creating triangles at this stage, but try not to make the mesh unusable (**Fig.14**).

Since the other side of the mesh is identical, we are going to use a Symmetry modifier to spare us some work. Don't be alarmed that it doesn't match that much. Move the vertices until it does.

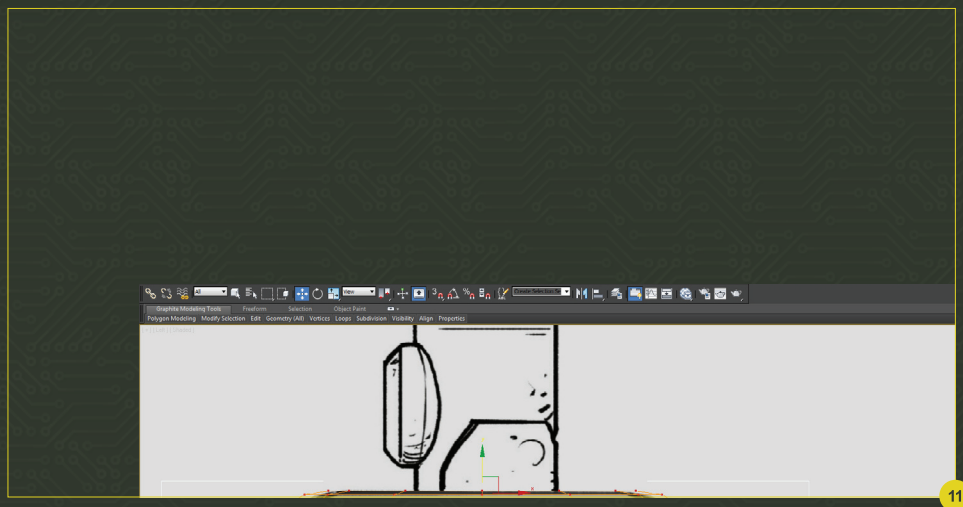
I keep moving vertices around to match it as closely as I can (**Fig.15**).

I need some more polys here, so I select one of the faces I need and extrude. Afterwards, I delete the interior faces and weld the verts (**Fig.16**).

Okay, so it's time to add a TurboSmooth to our mesh now to see how it will look. As expected it's very blobby. We need to add a lot of supporting edges to tighten the mesh to make it actually look like a hard surface (**Fig.17**).

If it isn't good enough after your initial changes, feel free to go ahead and refine it a bit further (**Fig.18**).

Then do a quick render to check how it looks (**Fig.19**).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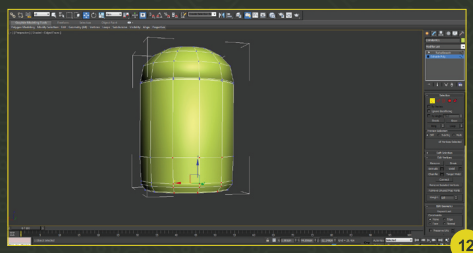
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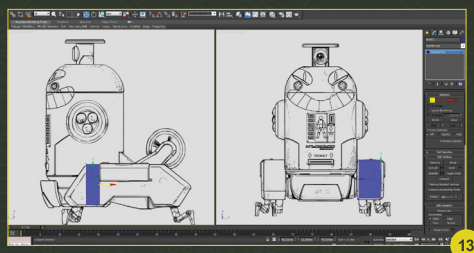
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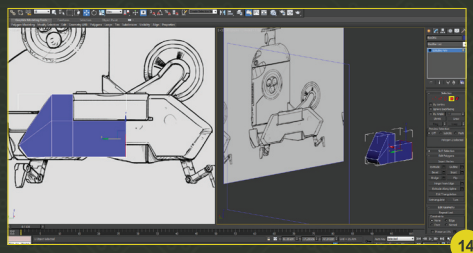
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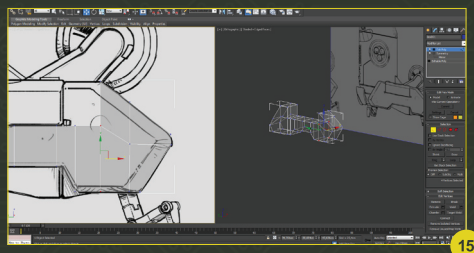
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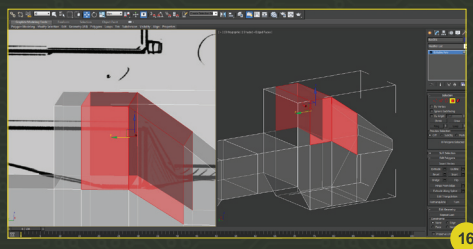
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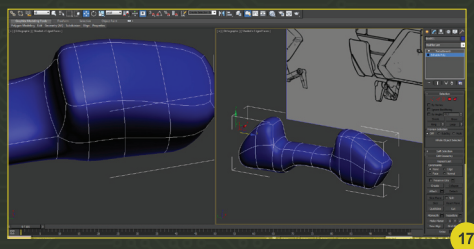
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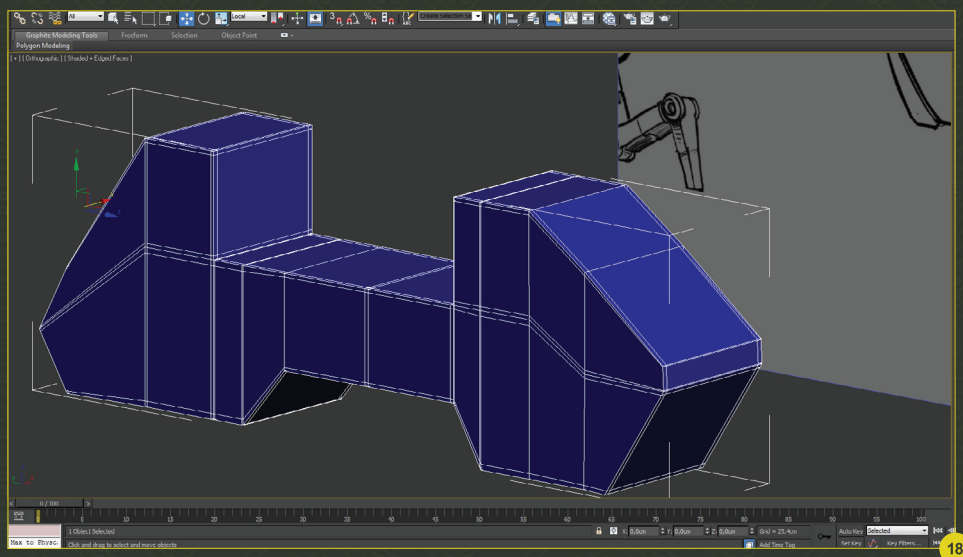
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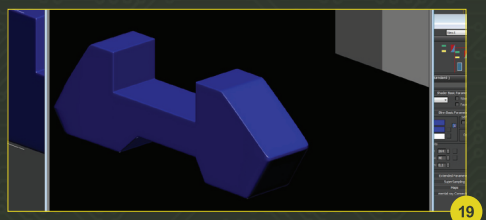
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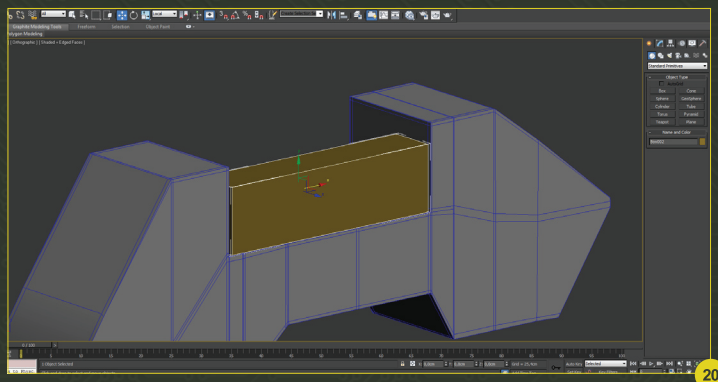
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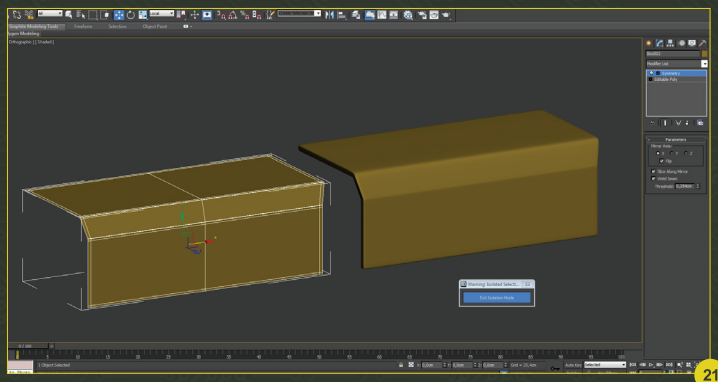
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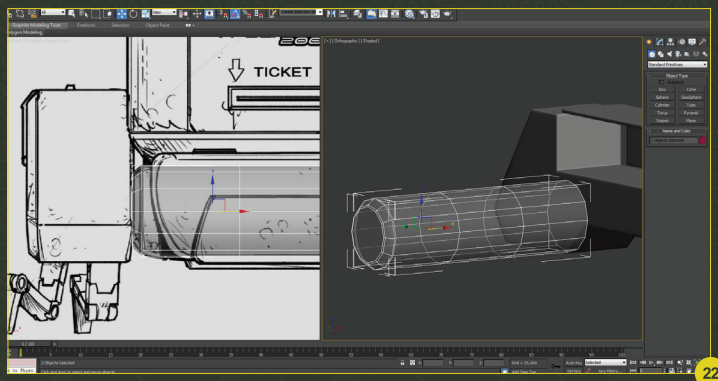

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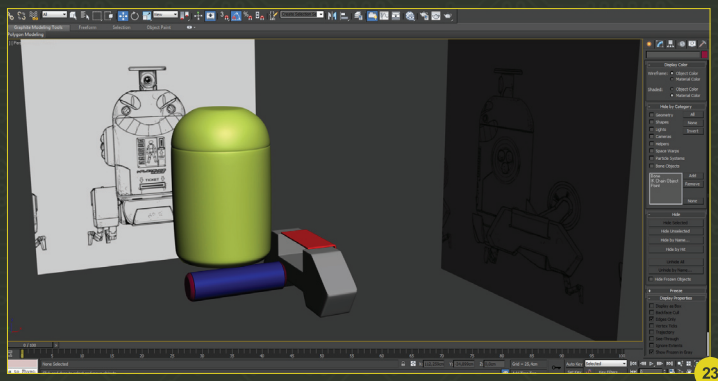
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It's a good idea to do some quick cleaning of the mesh too, to make it more appealing wireframe-wise (in terms of rendering the changes won't be seen, but when you want to add more detail – or when you reach the UVing stage – I think it's important to have the cleanest mesh possible).

Now it's time to add another piece. Let's create another box and place it as shown in **Fig.20**.

Add a few more edge loops and shape it accordingly to the concept. You only need to shape half of it as we can use Symmetry for the other half (**Fig.21**).

Create another cylinder to start making the lower base parts (**Fig.22**). As you can see, I've made extensive use of the Symmetry modifier, so I only have to worry about the half surfaces.

Another thing I also like to do is to color code my pieces. I switch between fully gray colors and each piece with a different color, to get an idea of the overall modeling I have done (**Fig.23**).

Even though we haven't finished all the pieces yet, I want to look at modeling the cylindrical part onto the main body so we're going to do that next (**Fig.24**).

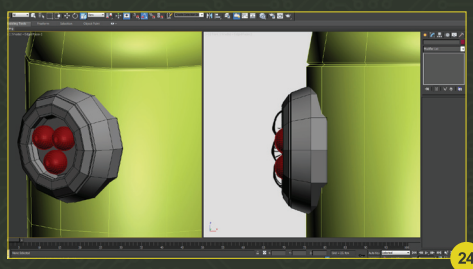
In the end, all the details inside the cylinder probably won't be seen as I'm planning to include the arms from the concept at a later stage, but I still think it might be really cool to show some hard surface modeling tricks.

Go into wireframe mode and in an orthographic camera, you want to start cutting the mesh around the spheres. This is also part of the reason why I told you that we should try to use as small a number of polys as possible, but enough that they will still work as a round surface when smoothed (so we have to do less cuts) (**Fig.25**).

Overall it looks pretty good in wireframe mode; let's see if it still works smoothed (**Fig.26**).

Even though mine looks perfect, I want the surface to be made fully out of quads, without any triangles or Ngons. So I will actually clean it a little bit further to make sure it's only quads (**Fig.27**).

The cylindrical piece looks quite a lot like the one that is holding the camera/light on the top of the robot's head, so let's duplicate it and scale it accordingly, and then we can change it if needed (**Fig.28**).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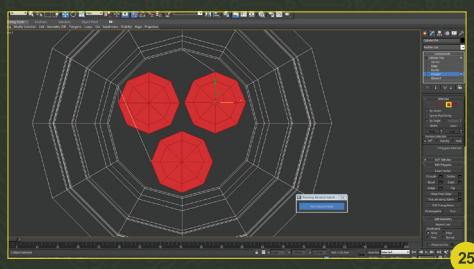
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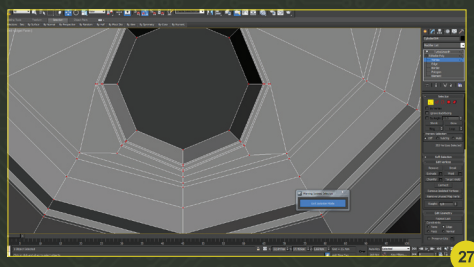
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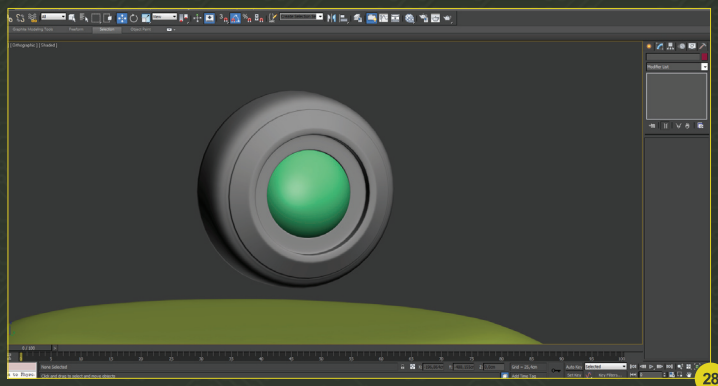
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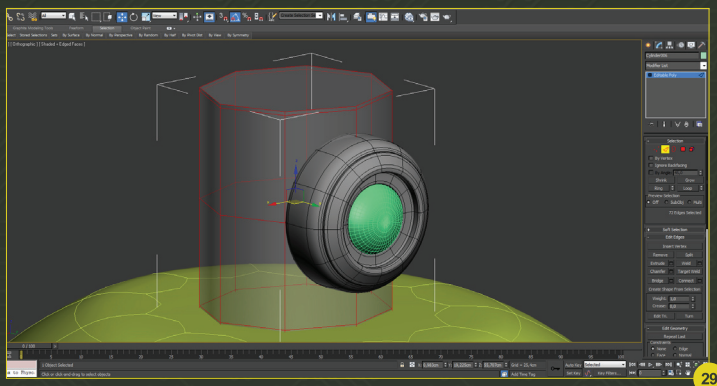
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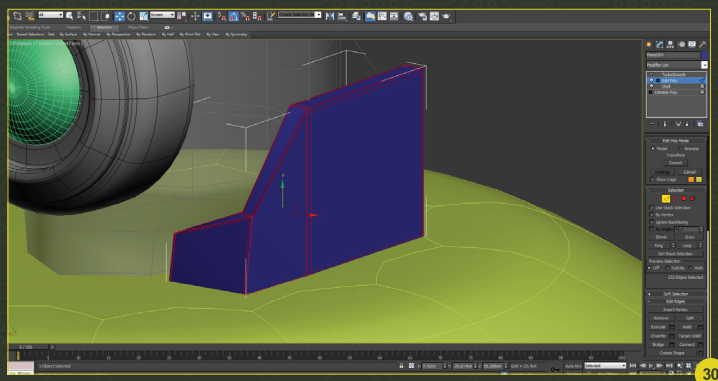
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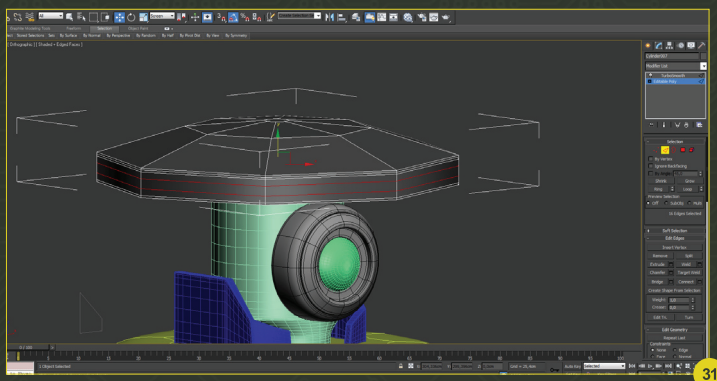
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Next, we're going to model the little metallic part that comes out of the robot's main body (**Fig.29**), before modeling the bits to the side of this shape.

Another thing I like to use a lot is the Shell modifier to give some thickness to my shapes, so the only thing I have to worry about is a single plane. I then clean it afterwards and add the necessary edges to make it work (**Fig.30**).

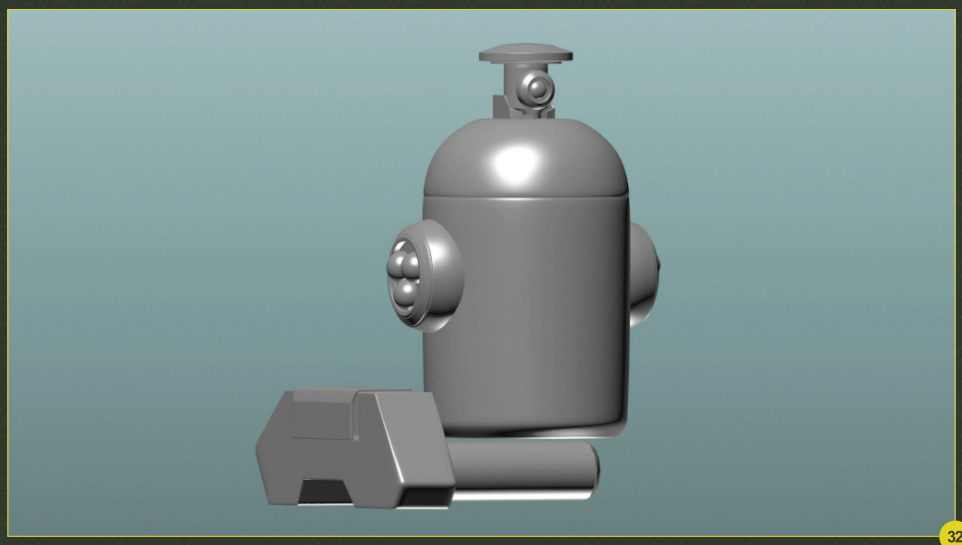
Now let's shape the cylinder a little. I'm not completely happy with my cylinder at the moment, but I don't want to spend too much time on that shape yet as there's still more of the silhouette of the robot to build, so we're going to move on to modeling the cylindrical cap on top. It's important not to spend too much time on each part at this stage (**Fig.31**).

Do another quick render to test how the surfaces looked with some specular applied to them (**Fig.32**).

Okay, so using the same technique I showed for the holes in the "shoulders", I will now cut the mesh of the main body to accommodate the actual shoulder piece (**Fig.33**).

We then want to add a little bit of detail (but very quickly) into the top piece. Stacking edit polys is a great way to add detail, so that you can easily revert back if changes are needed (**Fig.34**).

Another piece of the top part that still needs to be modeled is the cheek piece. Since the holes in this piece are so tiny, it might be cleaner to actually use a texture map in conjunction with a bump map to simulate the holes rather than model them into the mesh. The viewer will never see the difference, but to me it makes a lot of difference as the mesh will be slightly lighter in terms of the number of polygons.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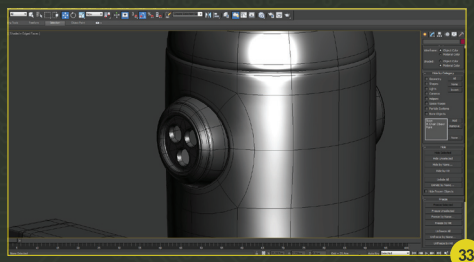
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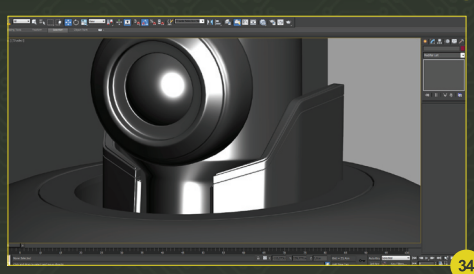
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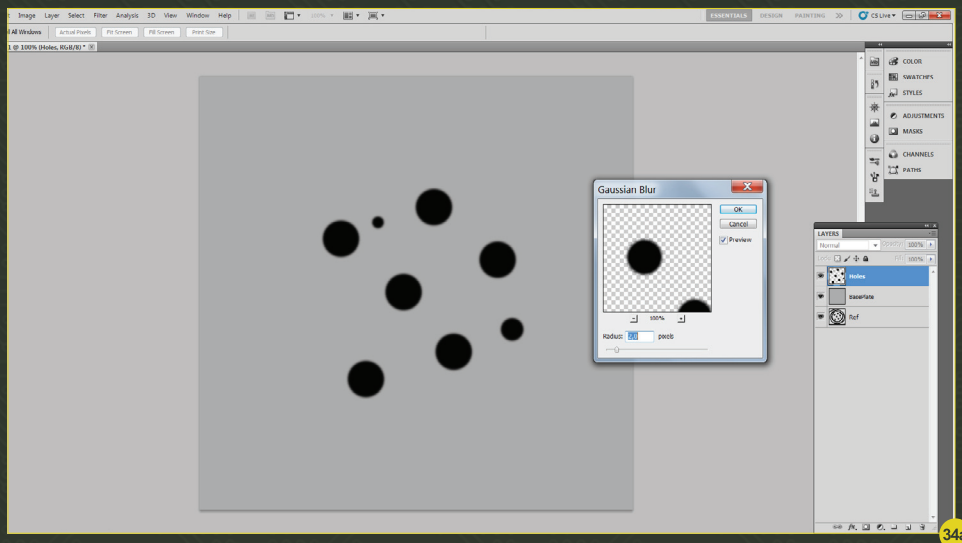

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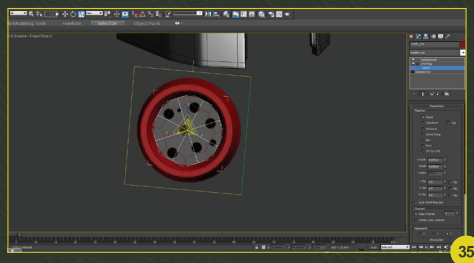
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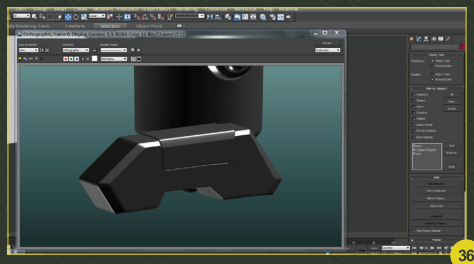
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I'd recommend Photoshop for creating a texture map – you can see mine in **Fig.34a**. This isn't a final texture, it's just to remind us that there are holes in there and help us visualize the robot as a whole.

We'll also need some planar UVs for this piece (**Fig.35**).

There's time now to quickly go back to the lower piece and reshape it a little bit more to make it match the concept. As you can see I'm jumping around a lot from piece to piece, giving them a bit more detail, more accurate shaping or cleanliness each time I revisit them (**Fig.36**).

I then add a bit more detail to the upper part now (**Fig.37**).

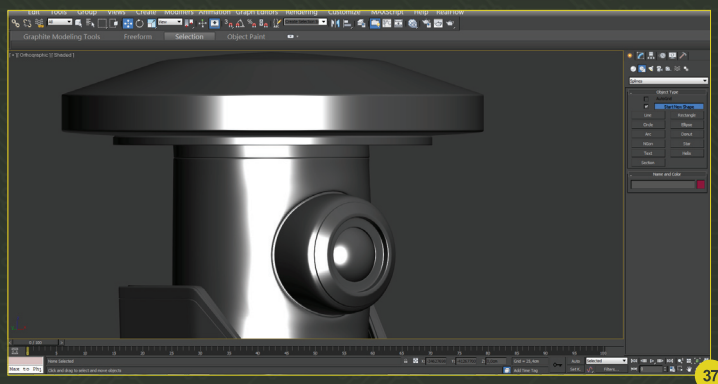
Let's do another test render, to see what stage we're at. The main silhouette is almost done, but we still need some more pieces. So, it's time to start modeling the back pieces, using the same process we did earlier (**Fig.38**).

Model the frontal piece comes next, which is an important part as it's where the customers can click to choose which parts of the body they are going to get massaged. This is a small piece, but probably the most complex one in the robot in terms of details. But it's not very difficult to model as it's quite a flat shape. Add the bolts onto the small cavities (**Fig.39**).

I've created some text, and shaped it to fit the circular shape of the main body using a FFD modifier (**Fig.40**).

I've also tweaked the shader a bit. It's probably a good idea at this point to have a look at the whole model using the new display viewport options in 3ds Max (Realistic mode) to get an idea of the stage we're at (**Fig.41**).

Time to fast forward a bit, tweak any shapes you don't like (for me it's the cylinder on top of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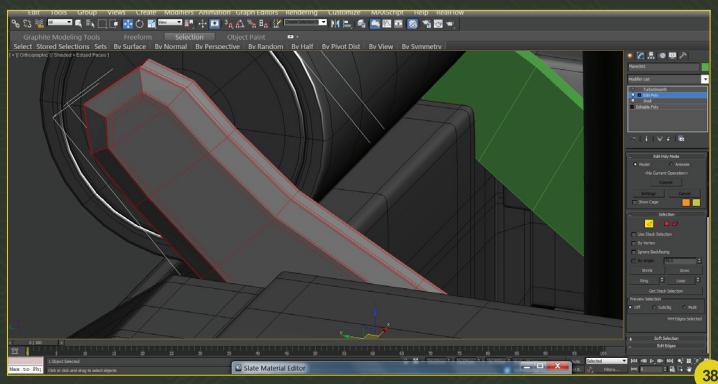
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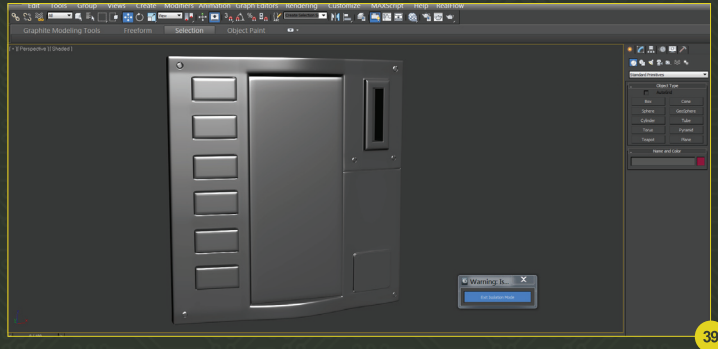
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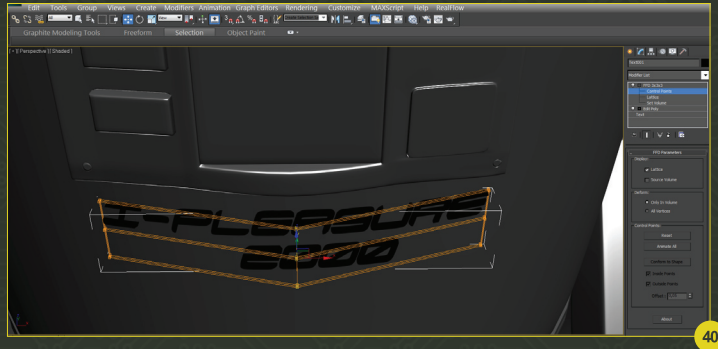
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the head) and add the arms. This makes the model complete in terms of the modeling stage (**Fig.42**).

So it's time to start the UVing stage. I really like to put a checker map to test my UVs and to know which objects are actually UVed already. I start with the easiest ones, like the arms; just a cylindrical UV map will work on these (**Fig.43**).

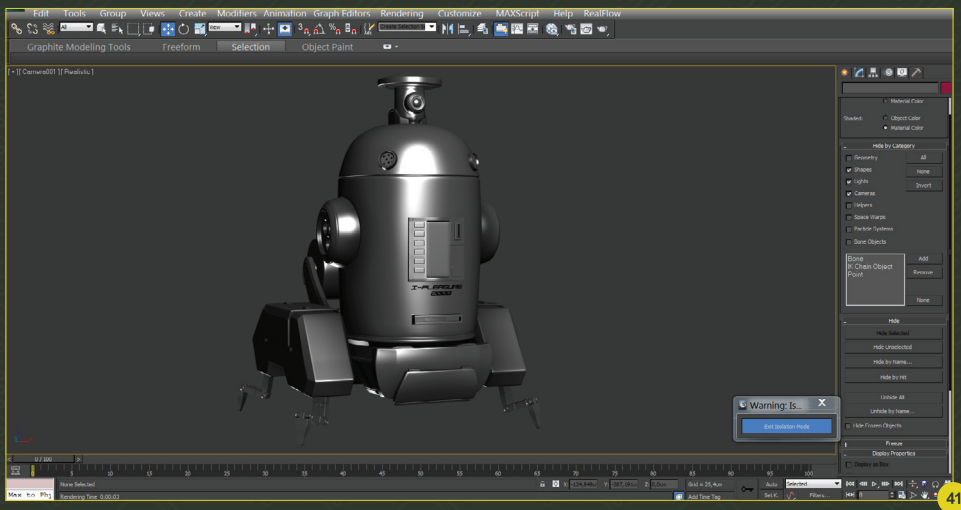
The same goes for the shoulder piece (as the flat surfaces are not going to be seen, the distortion on them is fine) (**Fig.44**).

I'm using a different type of UV layout for the part you can see in **Fig.45**.

The rest is pretty simple overall. I'm mostly using cylindrical mapped UVs – sometimes a bit of pelt mapping here and there – but since our shapes are pretty much round or square, the UV process doesn't pose much of a problem. Once all the UVing is done, it should look like **Fig.46**.

Next, we want to do a quick rig for the arms to pose them a little, as rendering the droid in a T-pose would be silly. So create two curves, one along each arm (with a few points each), and then skin the arms to that curve. It's a quick and dirty process, but it works perfectly for what we need. Make sure you do all the rigging below the TurboSmooth modifiers (**Fig.47**)!

After that, it's time to start the texturing process. For this project I'm using ZBrush (polypaint) and Photoshop to paint my textures. I'm using ZBrush to layout all the colors and paint all the grime and dirt on the metal, and in conjunction with ZApplink, I go to Photoshop and add fine details like scratches, and also paint the eyes of the character. (Please note that, in **Fig.48**, the eyes are not final; they didn't match the look of the robot in the concept so I tweaked them afterwards).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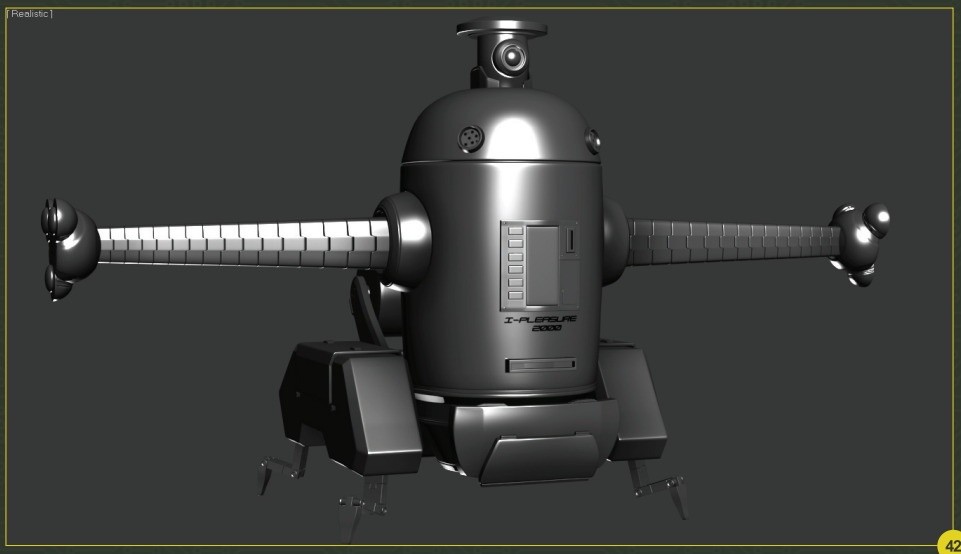

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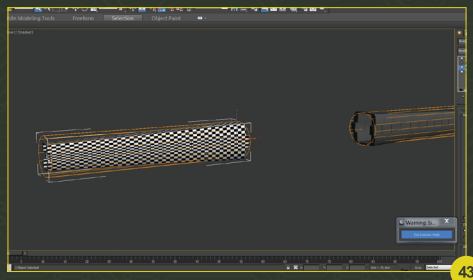
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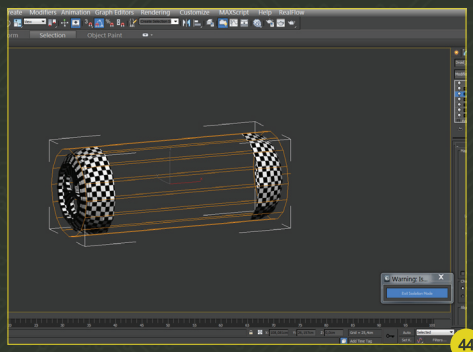
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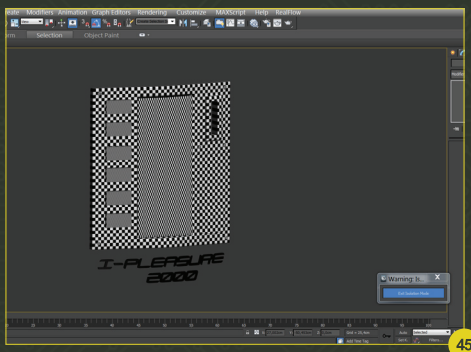
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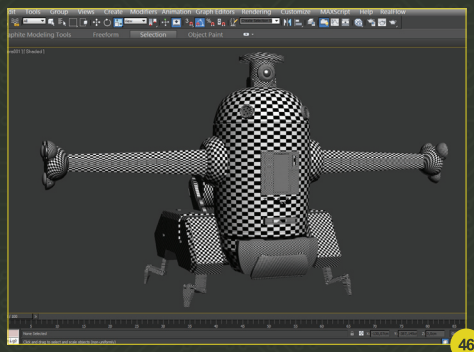
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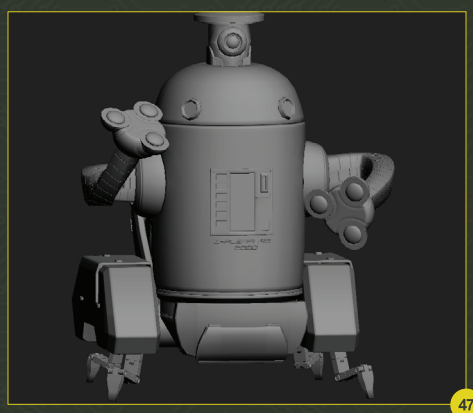
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The main body of my droid's texture looks like **Fig.49**. It's a mixture of hand-painted detail and some photo sourcing of metal, rust and dirt, from some pictures I took a few years ago using my DSLR.

Once all my textures are painted, I bring my model into Keyshot and render some passes to composite back in Photoshop to create the final render (**Fig.50**).

Once in Photoshop, start adding your passes, and painting more detail on top of them; adding some more scratches and details, fixing any render issues etc. I make extensive use of the masking feature in Photoshop layers, so I can't recommend them to you enough. It really makes for a great, non-destructive workflow (**Fig.51**).

And that's it. I hope you enjoyed this project overview and I hope that you have learned something from it. Hope to see you guys in the future, and please let me know if you have any questions. Cheerio!


51


49


50

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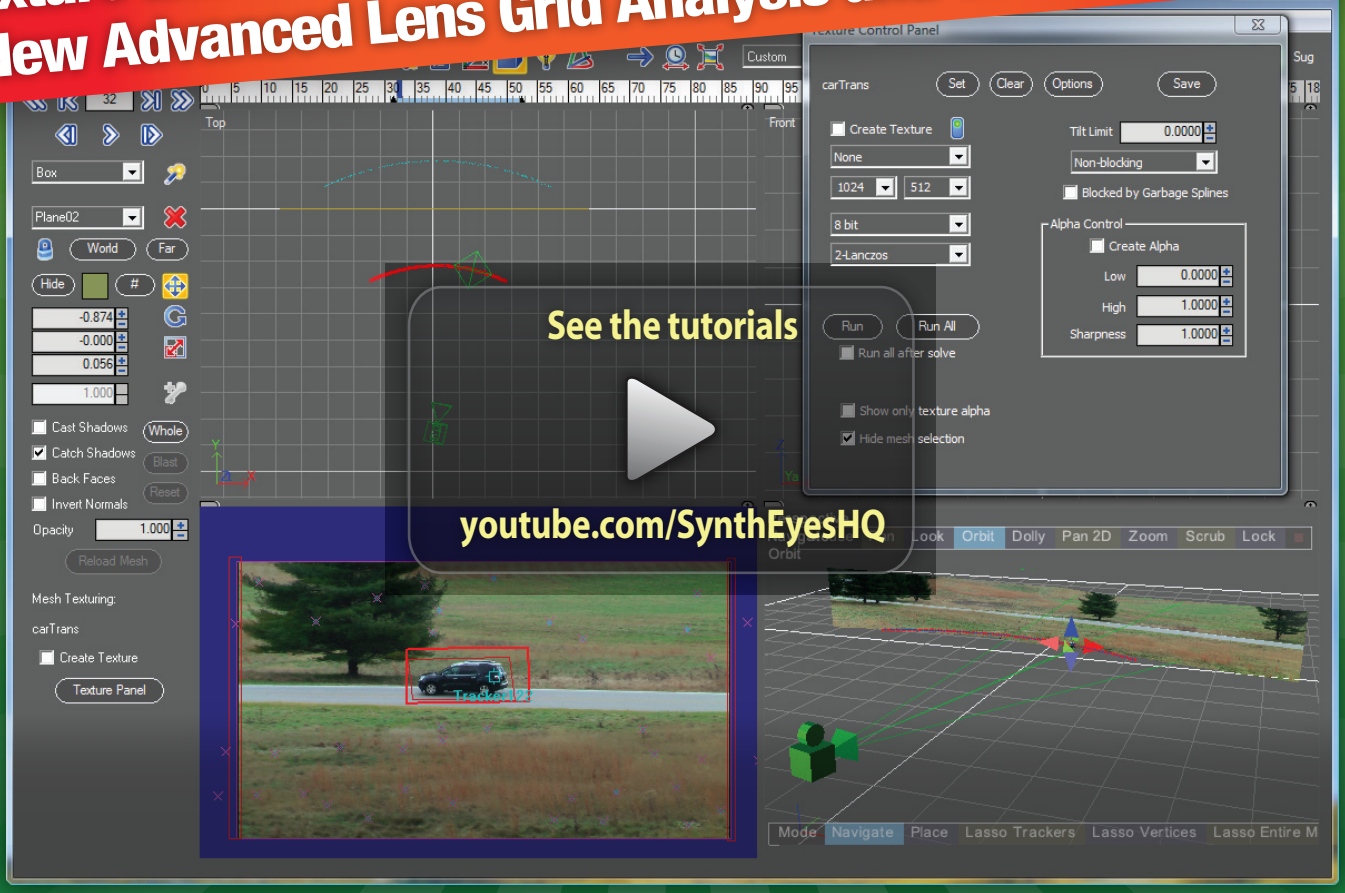

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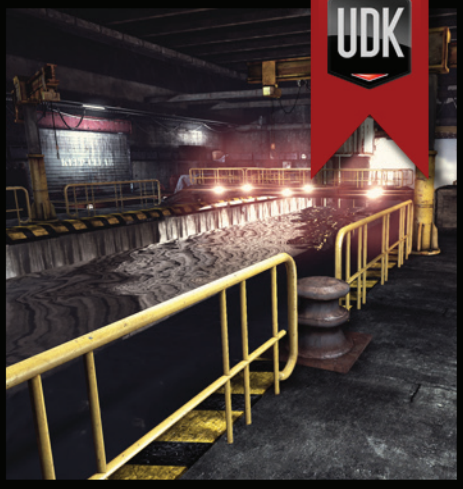

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THE SUBMARINE PEN

JULY ISSUE 083 Concept to White Box THIS ISSUE White Box to Custom Meshes NEXT ISSUE First Texturing Pass
OCTOBER ISSUE 086 Building Objects and Placement 1 NOVEMBER ISSUE 087 Building Objects and Placement 2
DECEMBER ISSUE 088 Details, Decals and Lighting JANUARY ISSUE 089 Finalizing Lighting
FEBRUARY ISSUE 090 Final Polish, Particle FX and Post-Processes

CHAPTER 02 – WHITE BOX TO CUSTOM MESHES

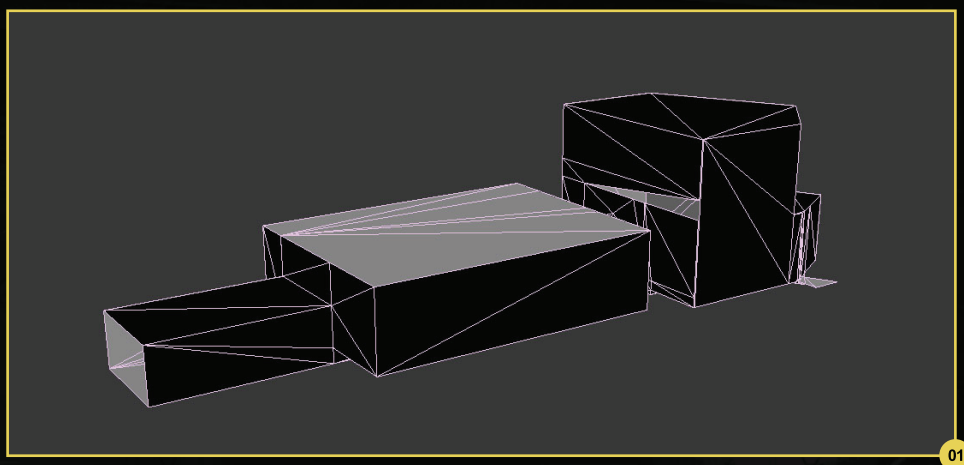
Software used: UDK, 3ds Max and Photoshop

Welcome to the second part of my tutorial series, in which I'm guiding you through the creation of a concept to the completion of an environment built in the games engine UDK. This is an intermediate-level tutorial and you should have at least basic knowledge of the software used. This tutorial is about the bigger picture of creating an environment. I won't be focusing on creating an amazing asset; instead I will be giving an overview of the process of creating the whole environment.

In the last chapter we created the basic white box version of our level so we could get a feel for the space around the player and ensure the level will look and play right. Once all the BSP geometry was finished, we then exported the mesh to 3ds Max, ready for us to start detailing and eventually export back into UDK.

So let's get started on the second chapter.

The exported mesh is one big object so, using the Edit Poly tools, select the faces that make up different sections of the large model and detach the elements into multiple objects. There are also a lot of unnecessary polys that we don't need, such as the exterior and the back faces. **Fig.01 – 02** show the before and after of this process; I've colored the different elements in Fig.02 to make it easier to see.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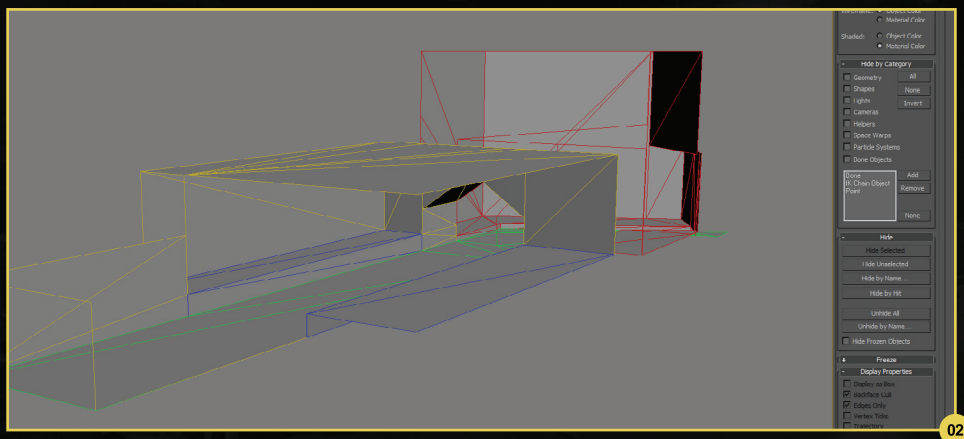
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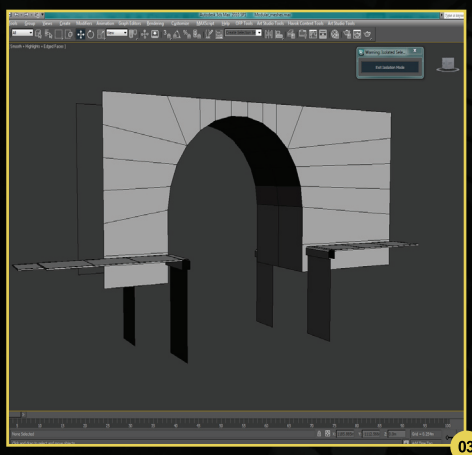
With the elements broken up we can isolate the ones we want to work on easily and detail them up. We're going to start with the arch in the middle of the environment, which separates the two rooms.

In **Fig.03** you can see I've used simple Edit Poly tools to add more edges to the archway so it doesn't look low poly. We're not going to spend a lot of time modeling the perfect model; remember this tutorial is all about the "bigger picture" and completing a finished environment.

For this reason a lot of the models I make for this tutorial will be quite basic and allow for the time restrictions I have in which to complete the project.

Fig.04 shows the finished model as far as I want to take it. As you can see it is quite simple; once it is in UDK we will add more models, such as pipes and light fittings, to add further interest.

In **Fig.05** you can see the textures that will be applied.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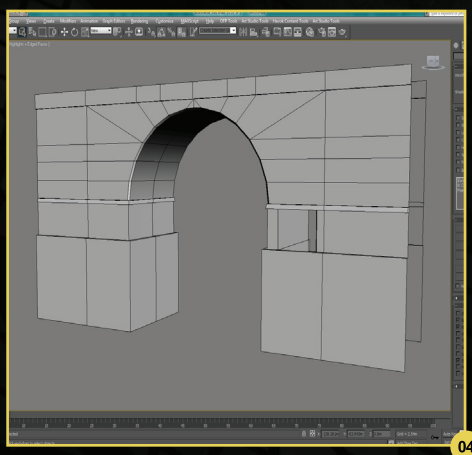
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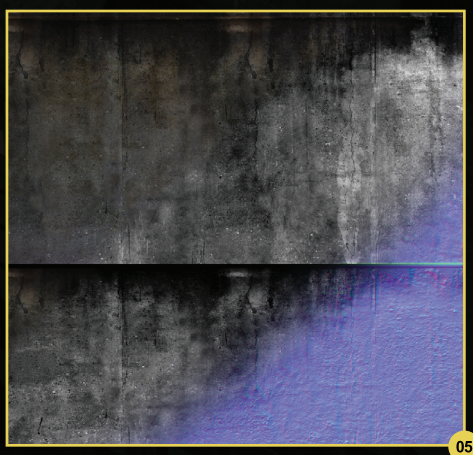
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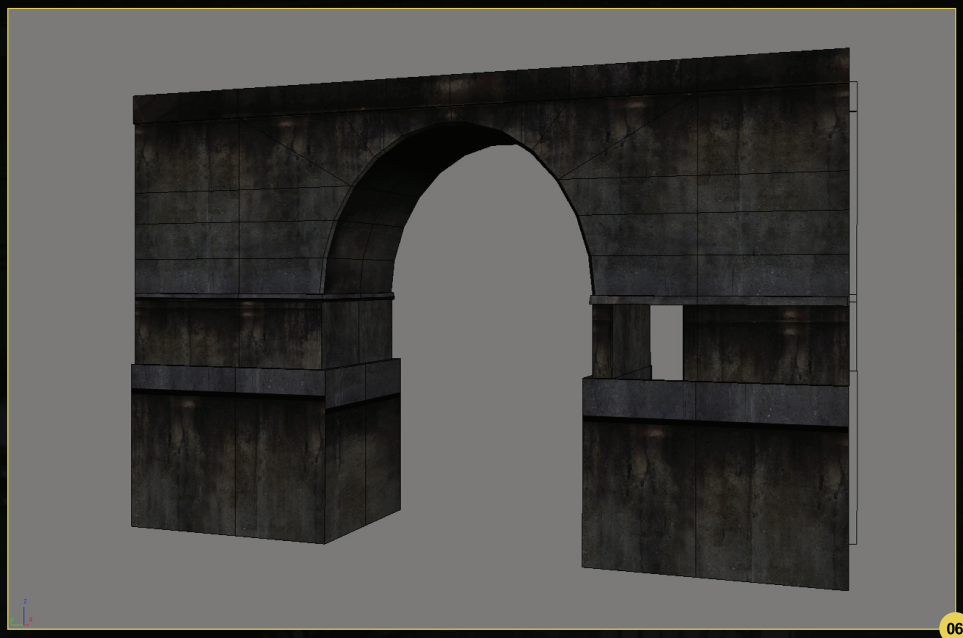
The textures applied to the model within 3ds Max are displayed in **Fig.06**. Again, nothing too special – I'm keeping it very simple. Of course, if you wish, you can spend a lot more time working up your models and textures, but for now this suits my needs.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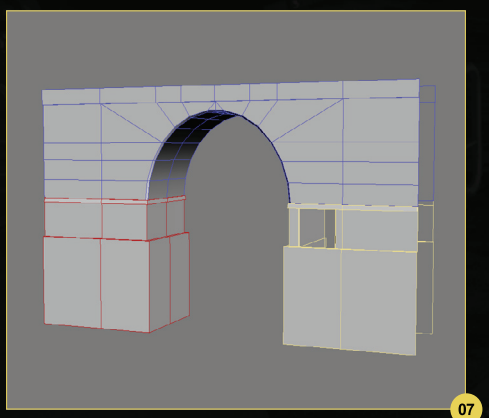
The archway is nearly complete now; all that's left is to prepare it to be exported into UDK. We need to think about lighting at this stage, because UDK bakes its lighting and generates light maps. We need to ensure we have enough UV space to get a good shadow baked onto the model later on in this process. Because this mesh is quite large in the scene, I'm going to break it up into three pieces. Each piece can then have its own light map UV space, and in turn have a higher resolution shadow. **Fig.07** shows the different colored sections.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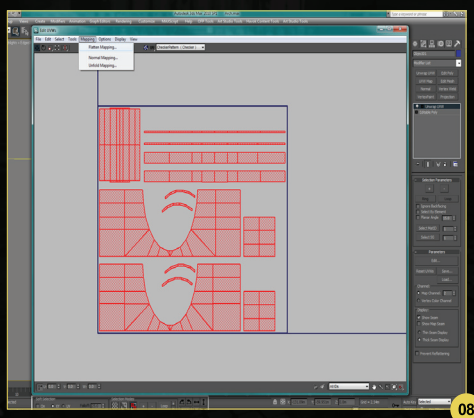
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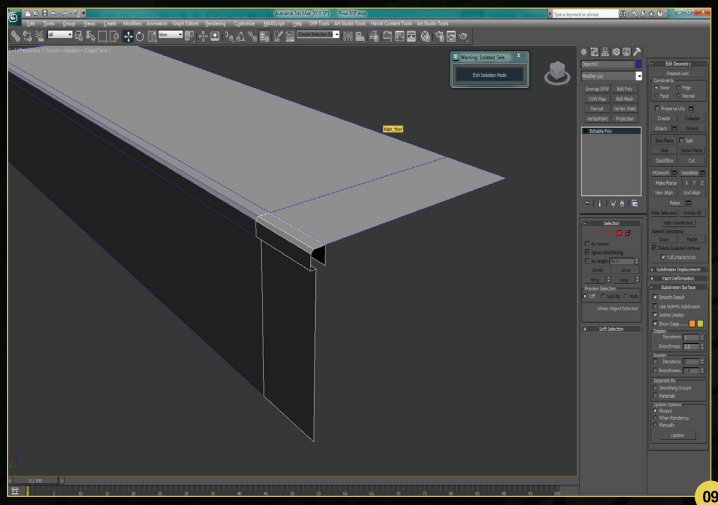
Apply a UV Unwrap modifier to the top of the archway model, and make sure the UVs are set to mapping channel 2 (this is important as this is the channel UDK uses to map the light maps). Selecting all the polys in the top of the archway model, use the Flatten Mapping tool in Max's UV Unwrap. This automatically flattens all the surfaces and lays them out within the UV. It doesn't overlap any polys as this would cause shadow errors. **Fig.08** demonstrates my final UVs for the second mapping channel.

Now you will need to select each element individually by going to File > Export > Export Selected. Select .ASCII as your file type and give each element a suitable name. Do this for the remaining elements and this completes our archway model.

Using the same processes as above, continue to create modular meshes using the larger exported BSP object. **Fig.09** shows the edging of the platforms; again a very simple modular mesh that we will duplicate in UDK to build up the environment.

The final textured model that will be used is illustrated in **Fig.10**.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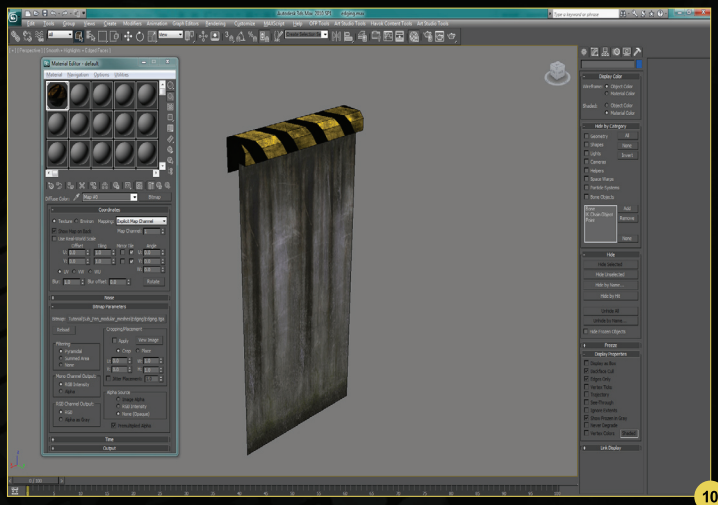
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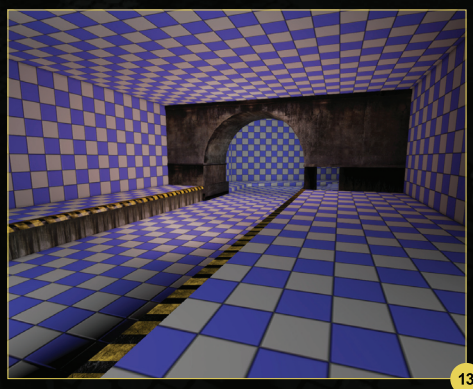
Continuing in UDK where we left off in Chapter 1, you should have the white box level open so we can start importing our newly created meshes and textures. In the content browser import the Arch and Edging .ASCII files we exported from 3ds Max. Also import the textures for both meshes and create two separate materials. Your content browser should look similar to **Fig.11**. Now apply these materials to your static meshes.

Once that is done we can now drop them into the environment by dragging and dropping the static mesh. Drag the archway static meshes into the environment and align them to their BSP equivalent. You can now delete the BSP archway mesh so it doesn't interfere with our static mesh version (**Fig.12**).

Now drag the "edging" into the environment and align it to the platform's edge. Once this is aligned, hold down Alt and drag a copy of the edging mesh to the side and continue all the way along the platform. Then do the same for the opposite platform. You should now have something that looks like **Fig.13**.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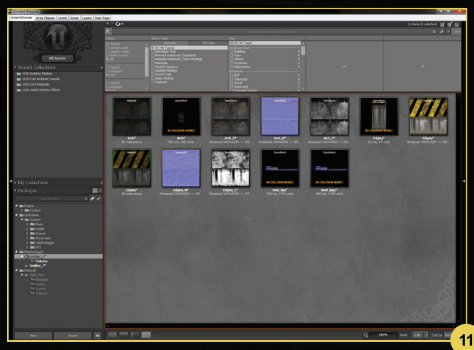
You can now go back to 3ds Max and create more meshes to use in our level. Remember I'm only interested in the infrastructure meshes at the moment; we will concentrate on creating the decorative objects in a later tutorial, for example barrels and shelves. Also feel free to add to the BSP mesh; I won't be replacing all of it with static meshes.

Fig.14 shows a corner room I've added using the BSP brushes. I've also cut out a simple doorway which we will texture up later on in the series. The platforms are looking a little narrow at this point – things will get particularly cluttered when we start to fill the scene with objects – so let's push the wall back to give us double the room to work with on the one platform. We're also probably going to be adding some natural elements at a later stage, such as rocks to give the impression the submarine base was built inside a cave.

Fig.15 shows the edited BSP geometry. Continue to do this around the environment to create some extra interest and help you to generate some ideas for the final look of this level.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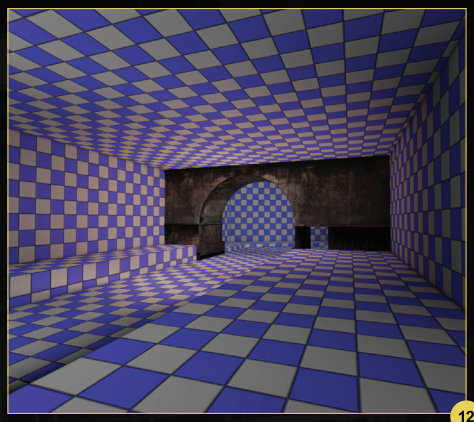
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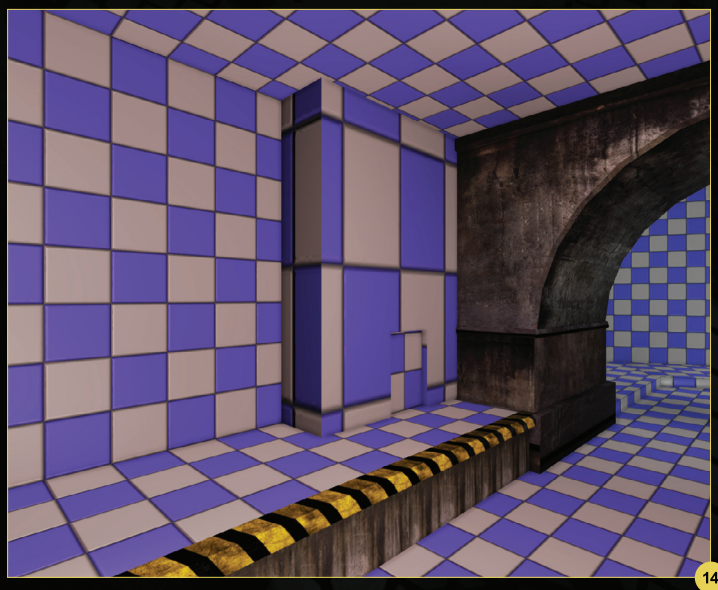
So that's it for this chapter. Next time, we will finish adding the infrastructural meshes and finalize the remaining BSP geometry. We will also add temporary textures to the BSP surface and should start to see the beginnings of what this environment will look like when we are done. So until the next chapter, keep on editing what we have and keep the ideas flowing. Thanks for reading.

ANDREW FINCH
Email: afinchy@gmail.com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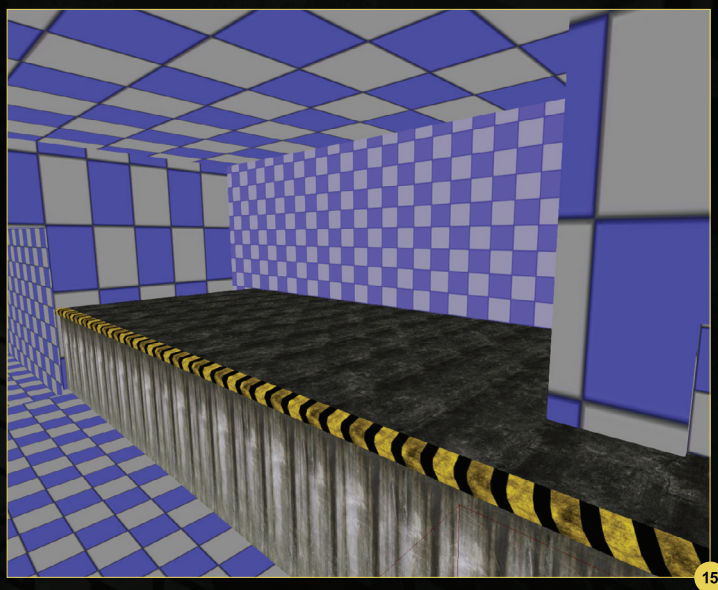
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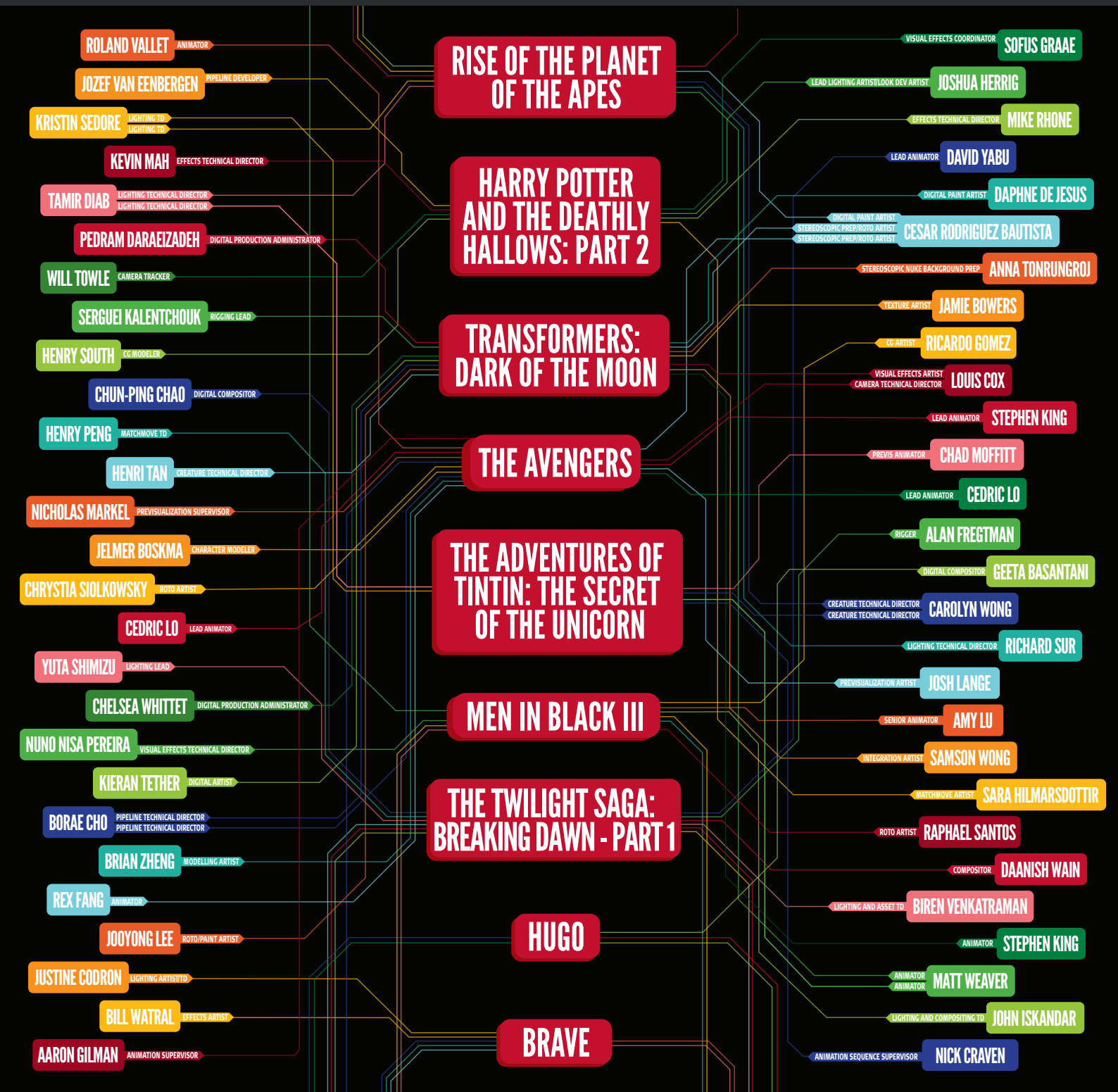

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CHARACTER PRODUCTION

Over the last couple of years, modeling realistic 3D heads and busts has become really popular. In this series we will be shown how to do this using 3ds Max, Maya and ZBrush. From the basic head model and a highly detailed head sculpt, through to texturing and post-production, our artists will cover every aspect of the creation process, providing us with the perfect opportunity to learn from their experience.

CHAPTER 05 – HAIR AND CLOTHING

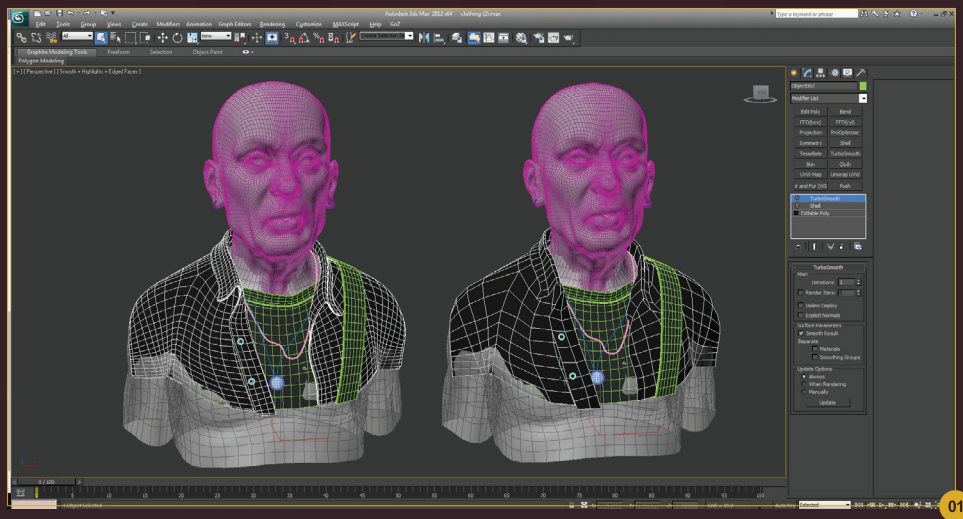
Software used: 3ds Max

For the clothing I only modeled what would be visible in the shot, but what is very important is to have a body under your clothes to be sure that everything you do stays true to the nature of your character. It's something I always do for games, cinematics or personal pieces; I always build the naked body (or a part) of the character I'm working on, even if at the end none of his skin will show. By having a body that matches the age and personality of the character (old, young, skinny, fat, athletic etc.,) I know that all the clothing added on top of the body will also reflect the character's personality. It also makes the modeling in 3ds Max easier, since I see where the polygons have to go.

For the shirt and the t-shirt I started with a single plane and extruded the edges one by one (with the Graphite tools/Freeform/Build on top) and then I added a Shell modifier for the thickness (**Fig.01**).

I used the same process as before for the UV unwrap, and unwrapped the UVs of the shirt, t-shirt and guitar strap (**Fig.02**). Then I exported all the pieces as OBJ files to go to ZBrush.

When sculpting clothing and folds I always start with the big details; I work on all the main folds before starting to do any detailing. I see a lot of artists who rush into doing the stitches and other small details, and then struggle to add the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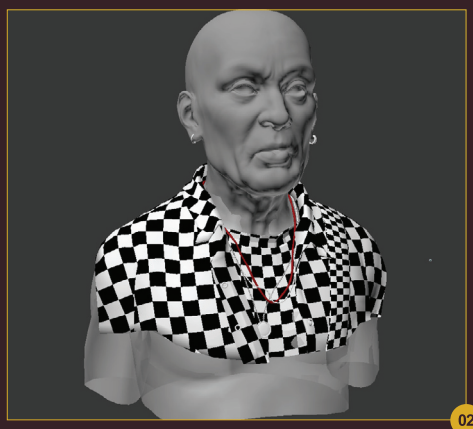
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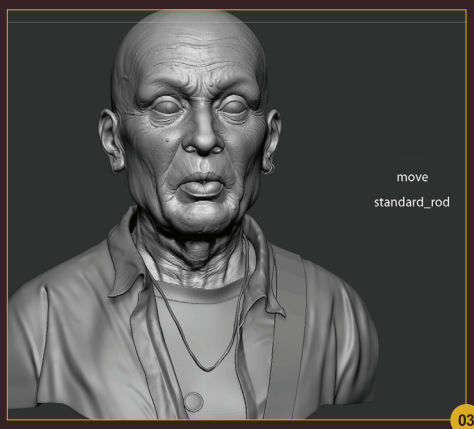


03

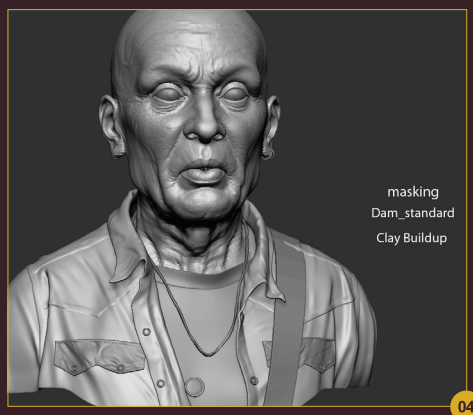
folds because they are worried about deforming or erasing their precious details. I prefer to lay down the big ones and when I'm happy with them only then do I start adding the small details (**Fig.03**).

Once this is done I start adding the bump shape of the stitches on different layers. I really like to work with lots of layers for details; this way I can boost the effect, reduce it, etc. It gives me more control without destroying any of my previous work (**Fig.04**).

I made the pouches a separated subtool to have more control and more definition (**Fig.05**).

For the next part I wanted to use a custom alpha to add more details to the stitches. There are many nice alphas out there and on ZBrush Central, but for this demo I wanted to use something I did myself. I created two alphas in Photoshop, one with small stitches and another one just with some cloth compression (**Fig.06**). For a better result I would suggest sculpting the stitches in ZBrush and then converting them as an alpha, but I was lazy and wanted to work fast.

I used these alphas along with some noise done in ZBrush (Noisemaker) to finalize the clothing



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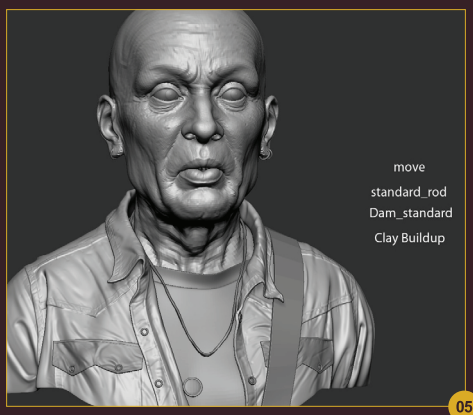

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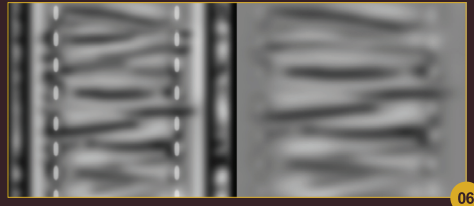
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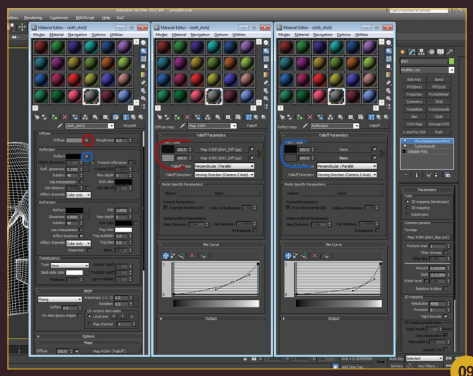
part. For the straps I did a small texture that I applied to the mesh and used as a mask to inflate and get the line details (**Fig.07**).

The texture part was really easy, as I only used a Displacement map (same settings as before) and one single diffuse texture (**Fig.08**).

In 3ds Max I applied a VRayDisplacementMod (same as before) and applied a VRay Shader

08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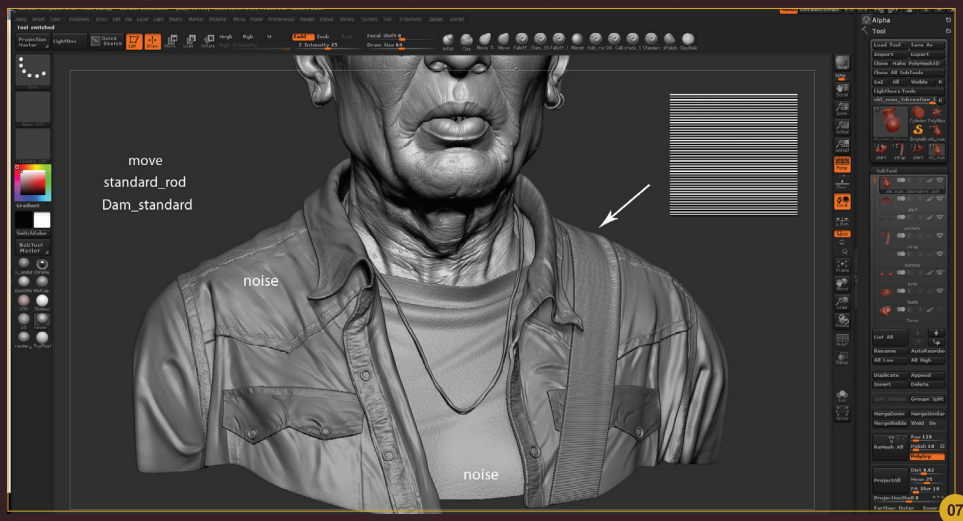
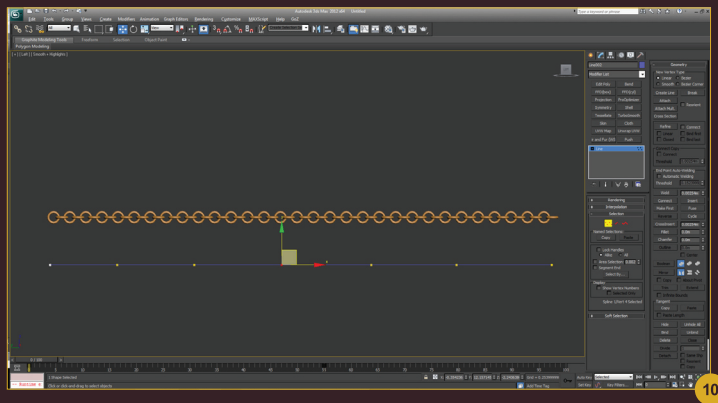


07

with only the Diffuse used on a Falloff (a kind of silk effect in the color) and another Falloff for the Reflection map (a kind of silk effect in the reflection) (**Fig.09**).

For the chains I modeled simple links on a flat line and created a spline of the same length (**Fig.10**). After combining all the links in one mesh I skinned it to the spline (**Fig.11**). After, I only needed to move the vertex of the spline to deform the chain (use Smooth on the points to have curves) (**Fig.12**). It's a cheap solution that doesn't conserve the integrity of the chain's links, but it's fast and we barely see the deformation and stretching on small objects.

I used this project to start learning how to use hair in 3ds Max. As it was my very first attempt I probably didn't use the best method, but here is how I did it. I started by making a copy of the head mesh and then deleted all the zones that would not have hair in my render. Then I cut the zones into small ones to have more control (**Fig.13**). By doing that I was able to not have hair on the back (as it would not show in the final picture) and I was able to focus on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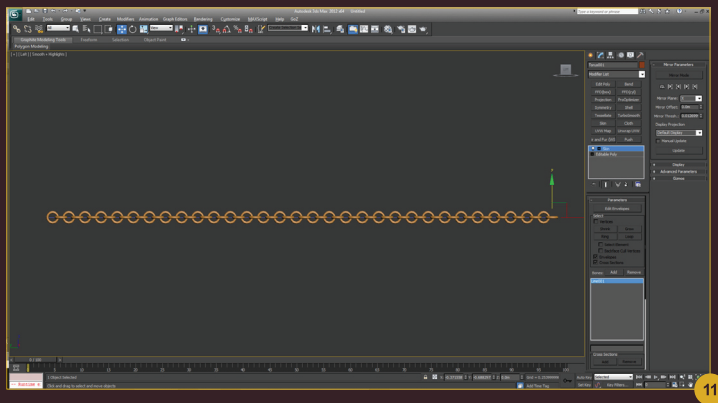
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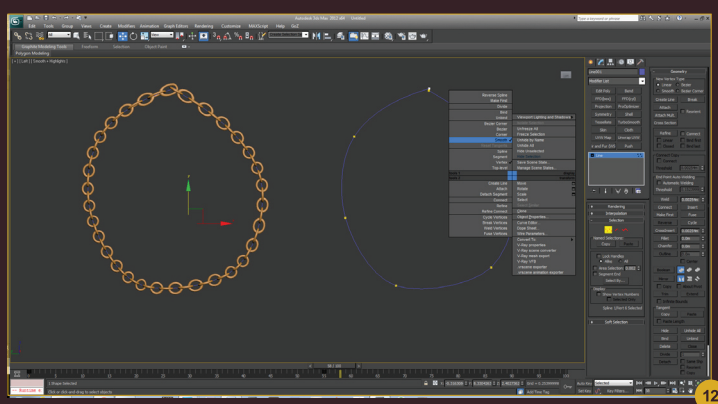
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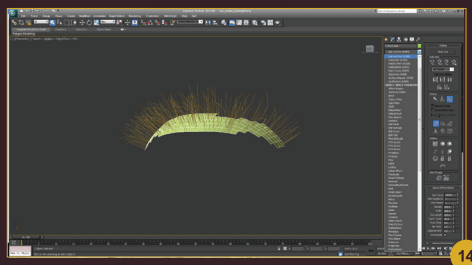
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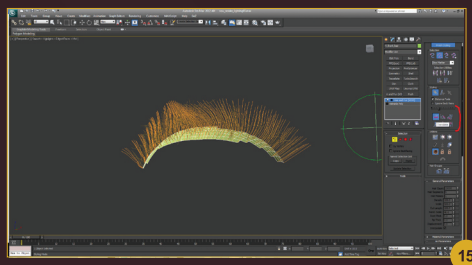
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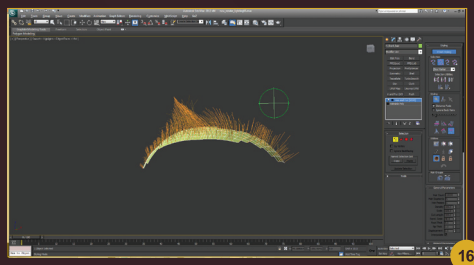
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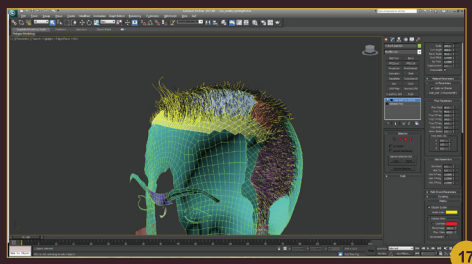
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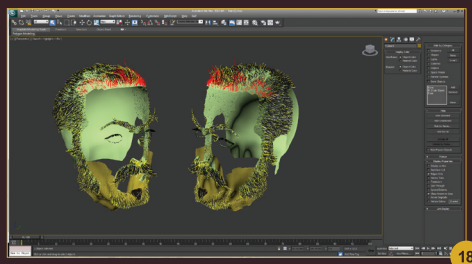
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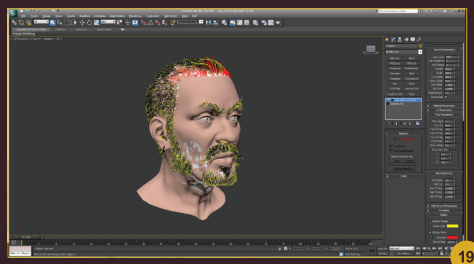
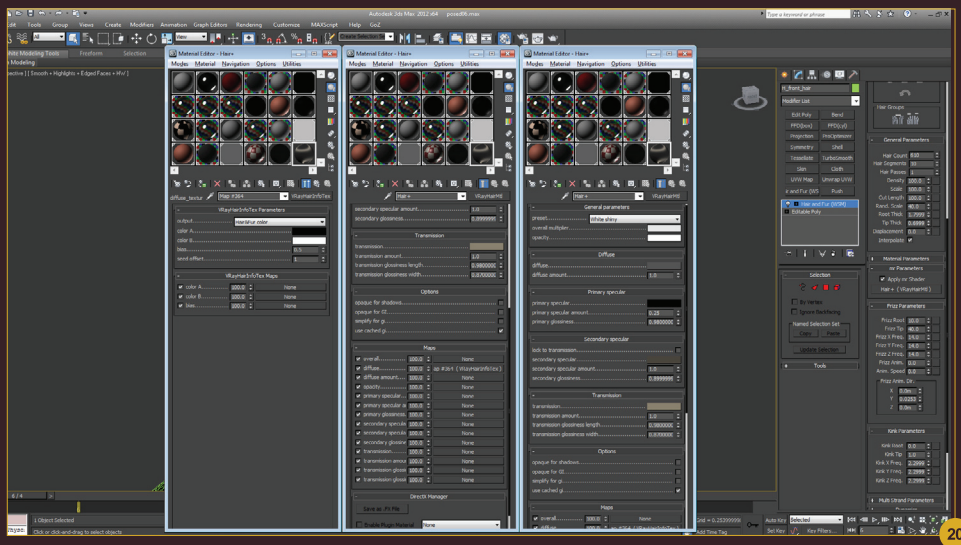

19

one part at a time, such as the eyebrows, chin, mustache, etc.

For each part I applied the Hair and Fur modifier (**Fig.14**) and used the Translate brush to get the hair flow I wanted on each of the parts. I used the slider to reduce the size of the brush and do more precise work (**Fig.15**) and then used the Cut and Group brush to give variety to the hair (**Fig.16**).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I wanted my character to be losing his hair, so I had a bigger hair count on the sides than on the top of the head (**Fig.17**). I used the same logic for all the different parts and looked at pictures of people and myself to see how the hair was flowing differently from the top of the head, the side, the moustache and the chin.

I also added an "overall" small hair part, covering the jaw, to smoothen the transition between the parts with hair and the parts without (**Fig.18**). For the last part I checked my hair wasn't going inside the head mesh too much and I made sure that the hair in the nose wasn't going through the nostrils (**Fig.19**).

I used the same shader for all the parts – the VRayHairMtl – which I plugged in the Apply mr Shader slot of each part. You can see my shader settings and hair settings in **Fig.20**.

21

At one point I tried to convert the hair into actual polygons to see what the result would be. It looked quite different, mostly smoother and thinner. It looked better in places like the eyebrows, but I decided to continue with the regular hair modifier and play more with the hair size settings (**Fig.21**).

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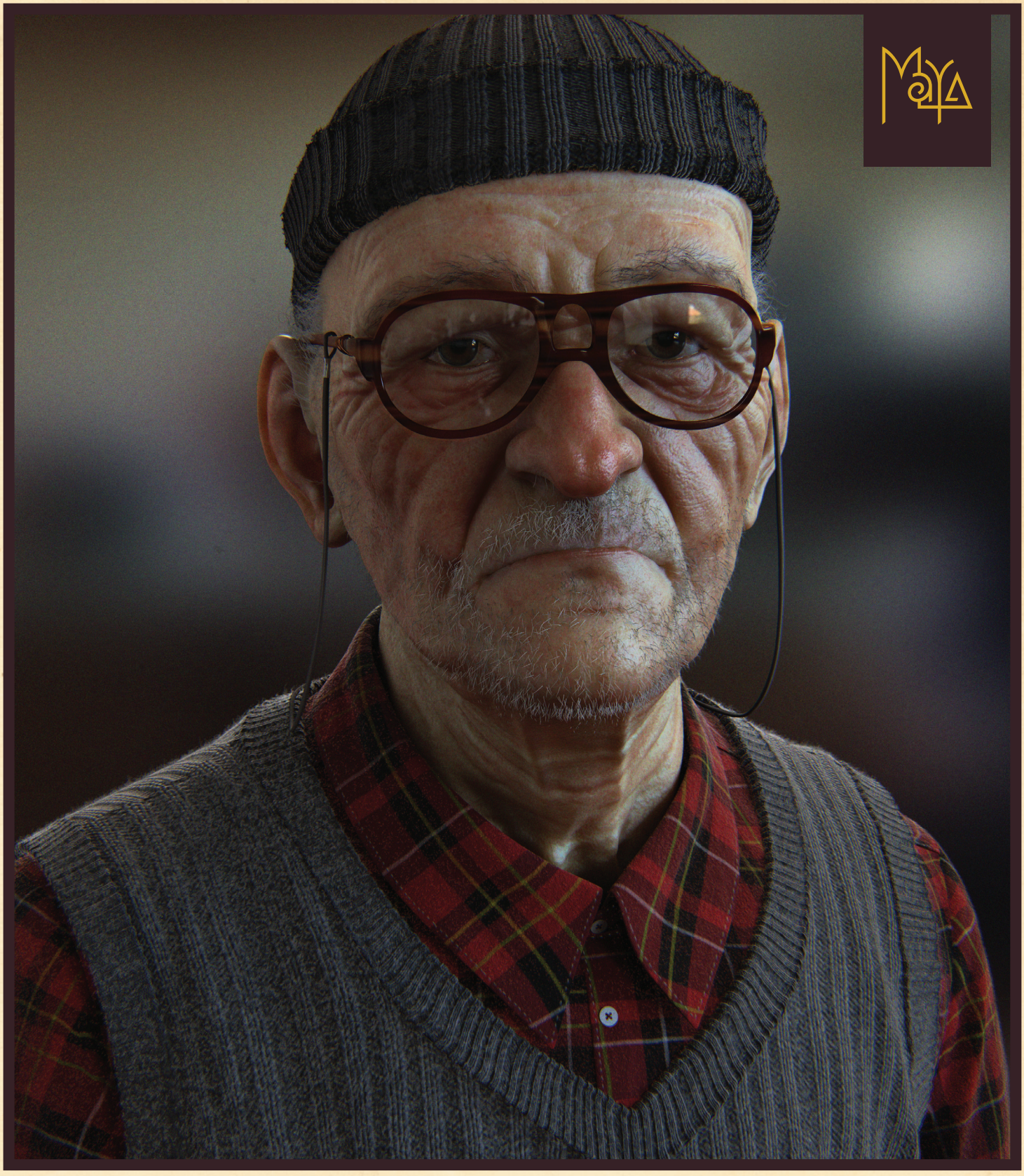
CHARACTER PRODUCTION



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CHAPTER 05 – HAIR AND CLOTHING

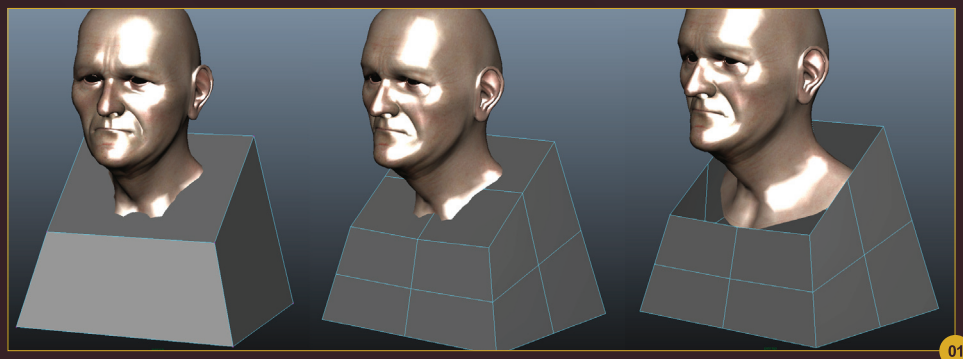
Software used: Maya, ZBrush

In this fifth tutorial, we will look at some poly modeling techniques, very similar to ones we have used to block out the basic head shape, but this time we'll model some cloth for our character.

After that, to finally complete all assets for this work, we'll add some hairs to the character's head using a few different techniques such as Paint Effects and Maya Fur.

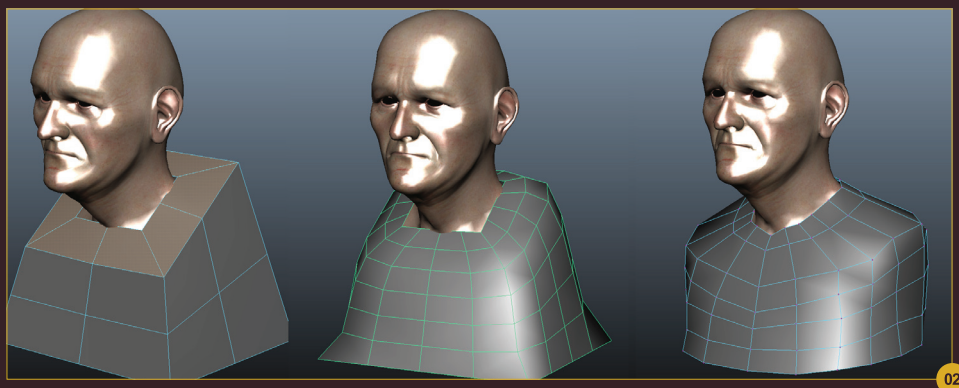
Let's start with blocking out a basic shape for the shirt.

As opposed to the edge extrusion method we used on the head, now we'll use box modeling. Instead of gradually building up a volume box, modeling usually starts with the volume. So let's start with a simple polygonal cube roughly shaped to the volume of the character's torso, as illustrated in **Fig.01**.



01

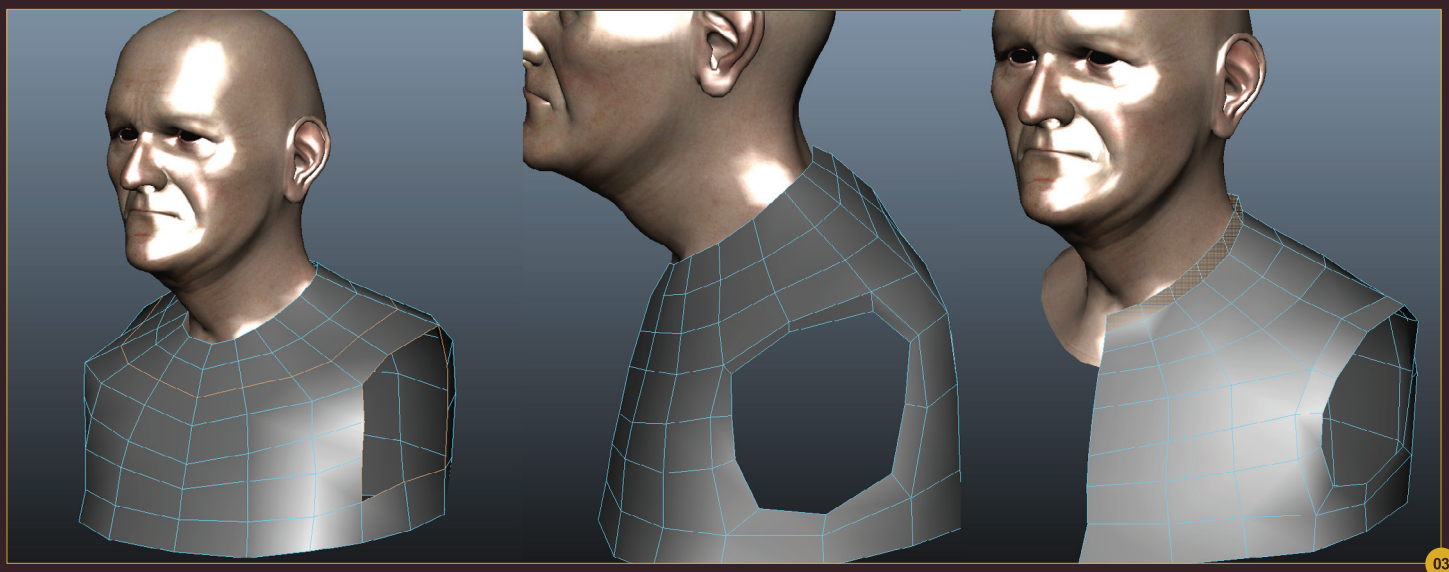
Split each face by adding a vertical and horizontal edge loop to one of the faces, and delete the top and bottom faces. Select the open edge loop on top and extrude to form a loop of faces around the neck. With this basic shape blocked out it's time to add some more geometry. Go to the Mesh menu and choose the Smooth option to divide the geometry once and smooth the shape. After that use Soft Selection to reshape the model until it looks similar to what is shown in **Fig.02**.



02

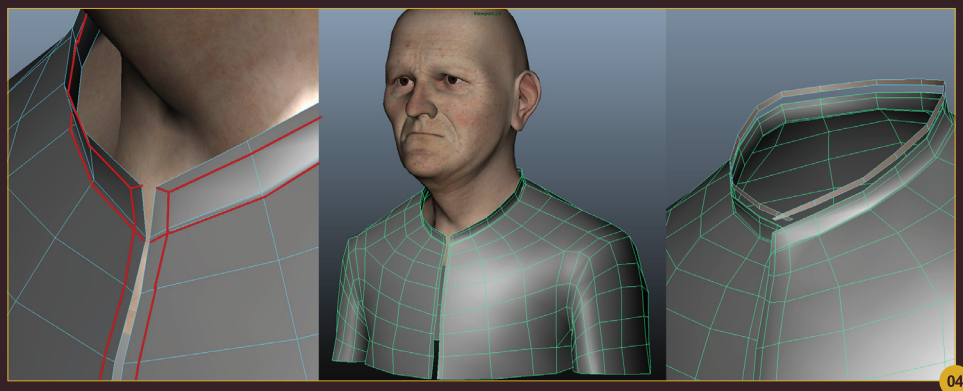
If you like to use a more intuitive way for reshaping, I strongly recommend you to download the Diamant Modeling plugin by the very talented Richard Scott Diamant. Besides a handful of amazing features, you will find a grab brush similar to one you can use in Mudbox.

Delete six faces next to the shoulder area to prepare some room for adding a sleeve. Add one more edge loop between the shoulder and collar area. Select the sleeve's opening loops and make one extrusion. Use the Average Vertices function from the Mesh menu to smooth the newly created geometry. Again use Soft Select transform to reshape the geometry. At this point you can duplicate this part of the geometry and save it as a starting point mesh for the vest, which we'll concentrate on after the shirt. The last few steps are illustrated in a **Fig.03**.



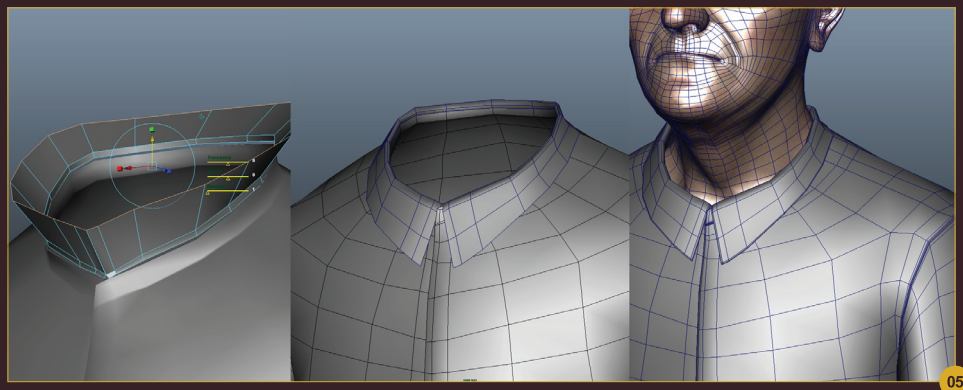
03

Add a loop around the collar and the middle of the shirt, as illustrated in **Fig.04**, and extrude the sleeve from the opening that we prepared for it earlier. Mirror the geometry to the other side and weld the vertices on the back of the shirt. Use the Soft Selection transform to overlap one side of the shirt over the other.


04

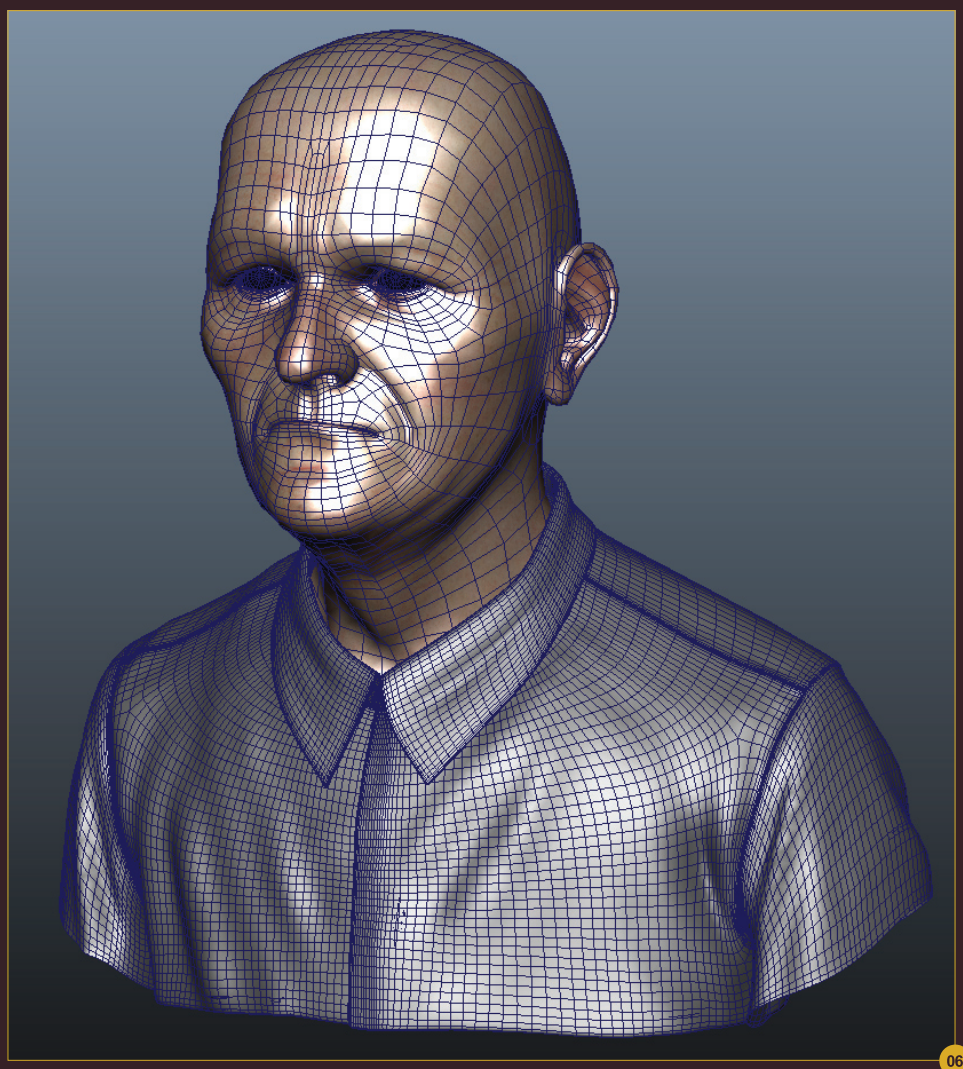
Next select all the faces and use the Extrude function to add a thickness to the shirt. Then delete all the inside faces that are not going to be visible.

Now let's prepare the geometry for the collar. Select the loops on the faces surrounding the neck area and duplicate the faces. See **Fig.04** for a step-by-step illustration.


05

Select the edge loop from the upper side of the new geometry and extrude once out on the X and Z axis. Reposition the extruded edges to roughly shape out the collar shape. Add a couple more edge loops to even out the geometry distribution and reshape the geometry to the final collar shape.

When we have a basic shirt shape modeled, it is time to add some detail to the cloth seams. Before going into detailing, add edge loops to the collar and shirt edges to strengthen the edges, then add appropriate loops in the shoulders to add seams, as shown in **Fig.05**.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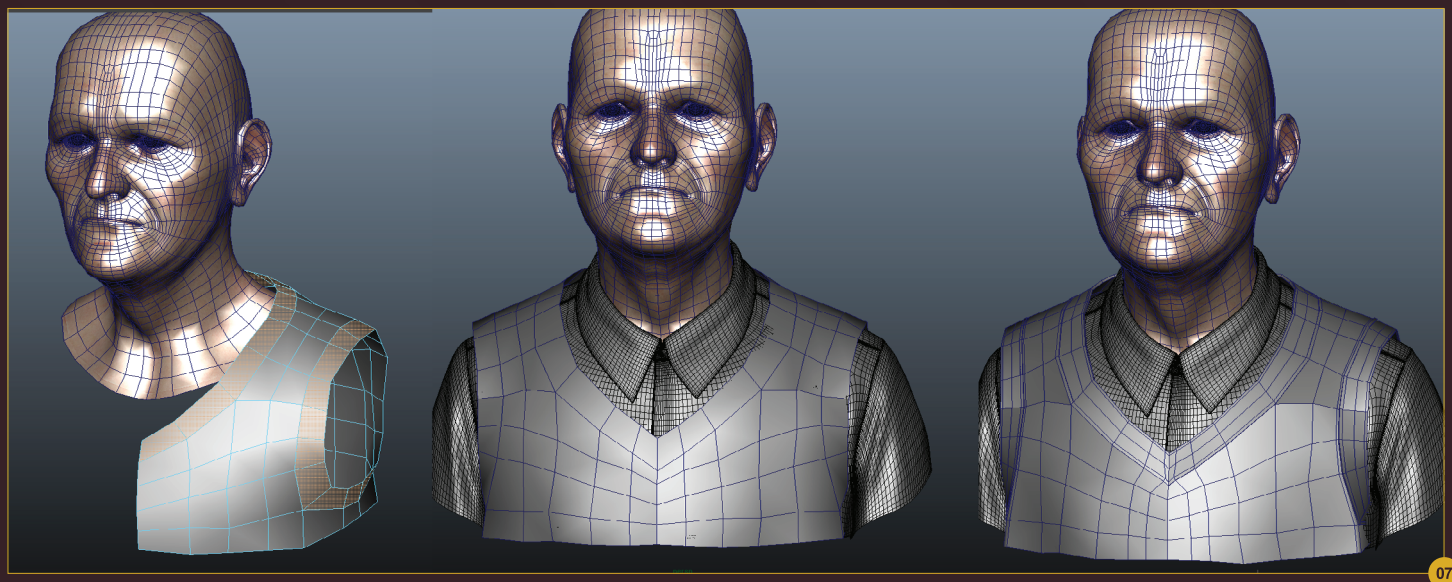
Now when we have got all the geometry in place it's pretty easy to fine-tune the overall shape and add more details.

After unwrapping this model I have separated the sleeves from the shirt to get a more pronounced seam. To make the shirt look more natural, add a few more divisions to the mesh with the Smooth function from the Mesh menu, and use Maya's sculpting tools to add a few wrinkles. You can see my final shirt in **Fig.06**.

To start with the vest, let's get back to the basic shirt model and reshape it to roughly the shape



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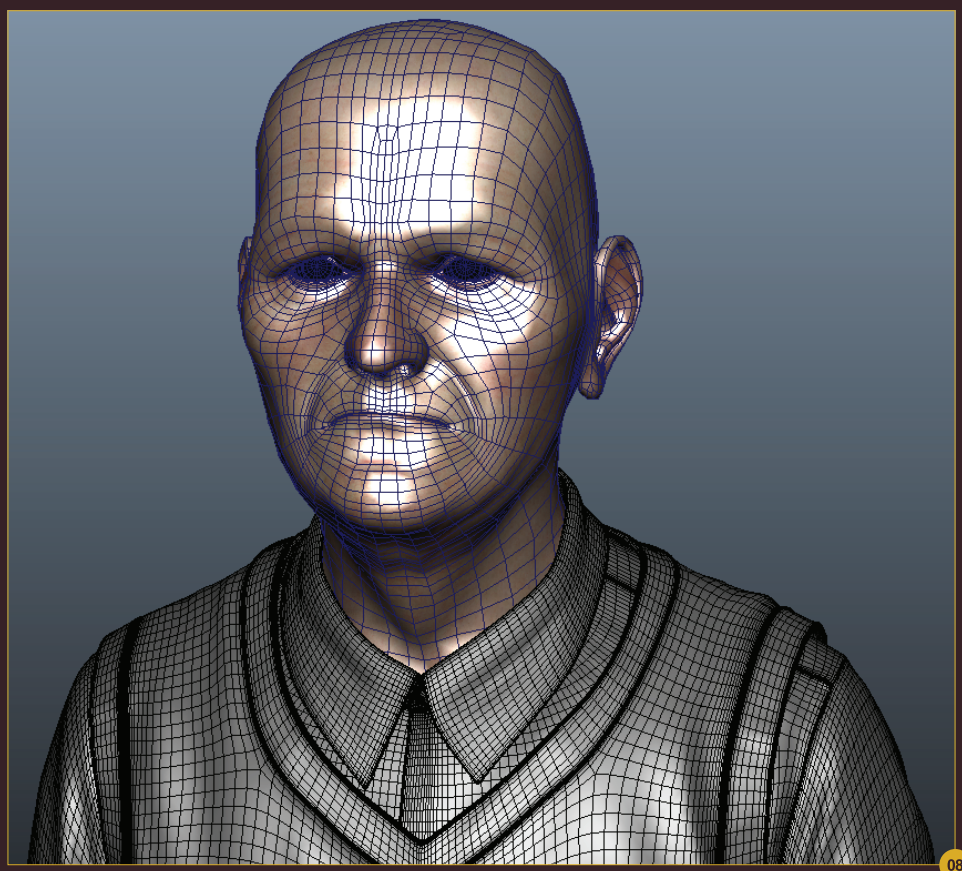

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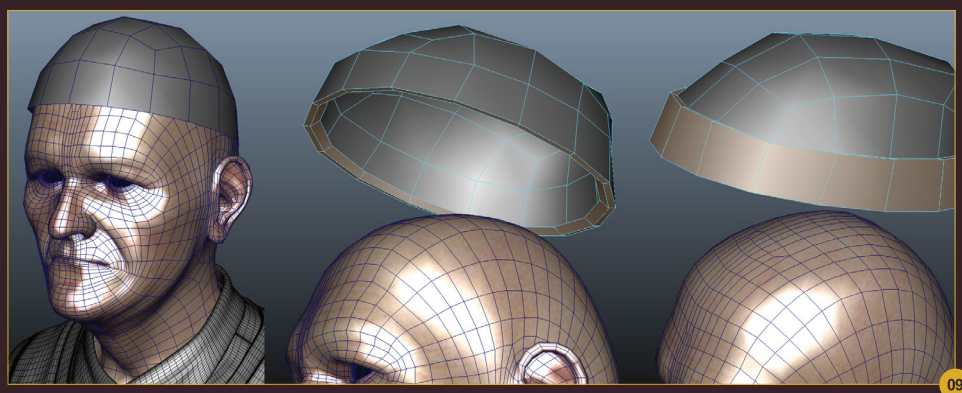


09

of the vest with the V opening. Note the marked polygons in the **Fig.07**, which are important for adding seams to the vest.

If you have successfully finished the shirt part you won't have any trouble with the vest, because it's pretty much the same in terms of modeling techniques. After blocking out a basic shape, add thickness to the geometry and delete all the unnecessary faces. Add edge loops at the seams and open areas to sharpen up the details.

Don't forget to unwrap the model before moving on to the sculpting, where you will add some looseness to the model to make it look more natural, as I did in **Fig.08**.

Finally, we reach the last piece of the clothes – the cap. This part will be straightforward because of its very simple shape. To start with make a simple box and apply the Smooth function to add two more subdivisions. With this method you will get a poly sphere and you need to delete the bottom half. After that place the newly created cap shape on the model's head and reshape it to fit properly. These few steps are illustrated in **Fig.09**.

After adding a few loops and reshaping to a final shape, I've come up with the result shown in **Fig.10**.

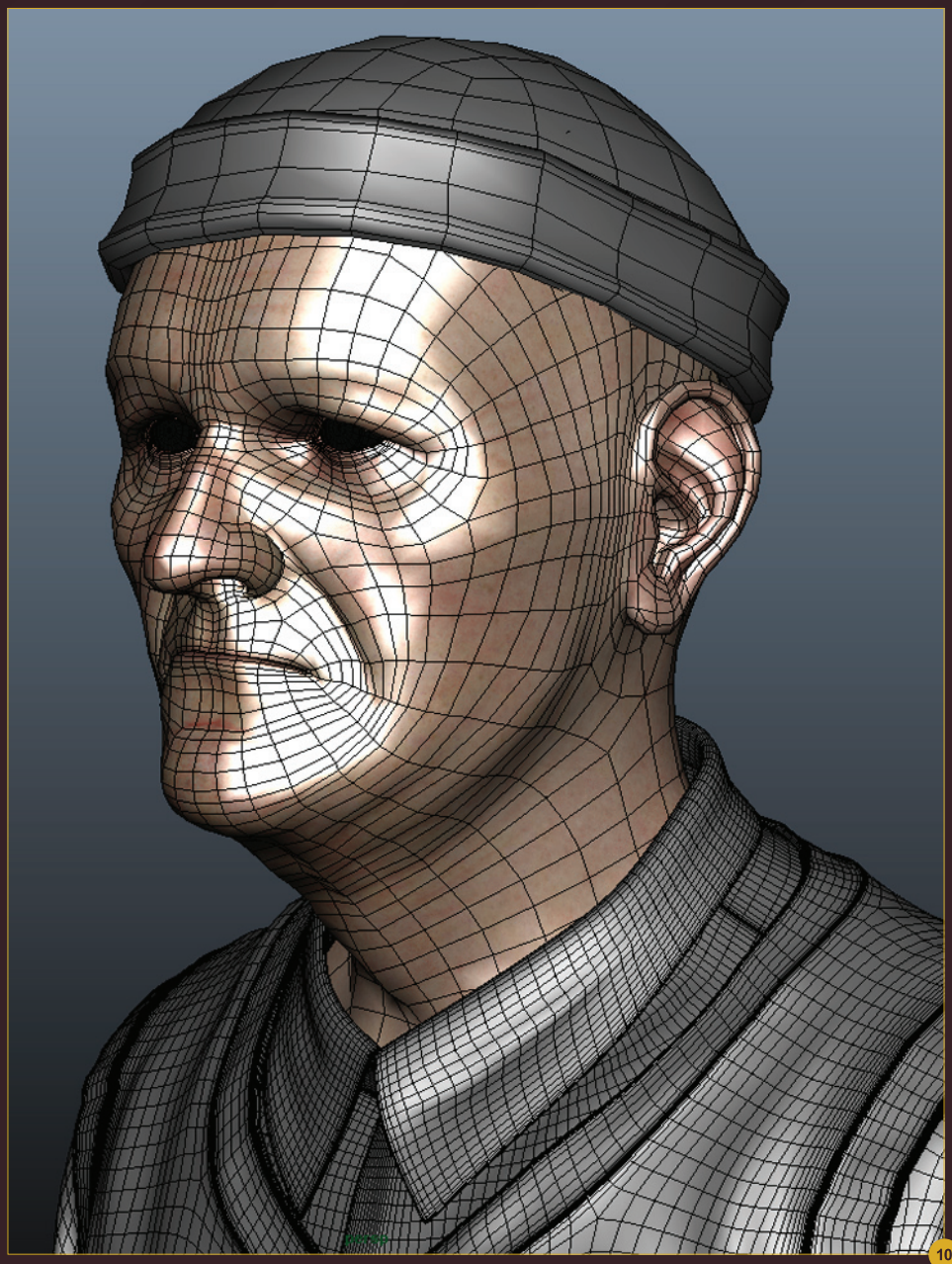
In the second part of this tutorial, we will concentrate on making facial hair using several different techniques available in Maya and V-Ray. Let's start with Paint Effects, which we'll use to make the brows and hair. Paint Effects is a very powerful system that will enable us, in this case, to grow geometry instances on top of the polygonal surface and much more.

We will start with the brows. You can choose Paint Effects either from the Shelf menu or from the Rendering sub-menu > Paint Effects. Select your head mesh and from the Paint Effects menu, choose Make Paintable. Now all strokes that we apply to the mesh will be snapped on the surface. Choose Get Brush from the Paint Effects menu, and from the hairs folder choose EyeBrowBlack preset.

This preset will serve as a good starting point, so make a stroke in the shape of the brow on the surface to generate the eyebrow. As you can see from this first stroke, the brow doesn't look like something that would fit to the size and type of our character so let's do some tuning.

Go to the attributes of the created stroke called eyeBrowBlack1 and let's start with the scale attribute. I've found that a scale of 4, 5 works fine for me as a starting point. Now move down to the Tubes menu and under the Creation options adjust Tubes Per Step to control the number of hairs generated on the stroke. I have set mine to 0, 7, which is quite a small number of hairs, but it will get much denser and more natural once I apply multiple strokes. The next parameter is Segments, which controls the number of segments along each hair. The more segments you have, the more sensitive the hair will get to displacement and deformations, which we'll address later.

The next one is the hair length. Default values are looking fine to me in this case, but you can play with those to get any desired results. This is the same with the Tube Width 1 and 2, which stands for the root and the tip width. Values of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11

0.004 and 0.003 work fine for me. Now let's play with some displacement.

There are quite a few options there, but I would like to keep it as simple as possible so I will only use the bend parameter for the sake of this tutorial. Feel free to experiment and maybe you'll get more interesting results.

I have set Bend to - 0.500 and Bend Bias to -0.300. It would be a good idea to save this preset at this time, so go to Presets in the Attribute Editor and save the brush preset. To apply this setting to every stroke you are going to make, choose Get Setting from Selected Stroke from the Paint Effects menu.

Now you are ready to make some brows, you can delete that starting point stroke and apply several new ones to make it look really natural. You can also adjust all settings individually to each stroke you make. You can use the same brush to make some hairs in the nostrils and ear hole. Every stroke has its own material and to use V-Ray materials you have to convert those strokes to polygons from the Modify > Convert menu. Now you can apply different V-Ray materials to each stroke. Later on we will deal with the shading of hairs. You can see my result in **Fig.11**.

We will use the same technique for the hair, but this time we will use a brow preset as a starting point. First change the brush with the parameter to a higher value, because it will be much easier to generate hair with the wide stroke. I set my value to 0.500. After that move down to the Creation menu and adjust the hair length. I am going for a more bushy hair style, so I'll set mine to 1 for the max and 0.500 for the min length. I'll also add a few more Tubes per step; a value of 5.000 works fine for me. The last thing I'll address is the Displacement menu, where I'll play with some noise and wiggle options. Note that since the hair is now much longer, you will also need to increase the number of segments.

Once you are satisfied with your settings, don't forget to save out the preset. You're now ready to lay down a couple of strokes to populate the hair area, as I did in **Fig.12**. You can use the same approach to generate hairs for the beard.

That would be all for this tutorial, I hope you found it useful and enjoyed it. In the next and final tutorial we will polish the whole scene and try some different lighting techniques.

ANTO JURICIC

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BAGPIPER

MAKING OF BY OLEG NIKOLOV

You may remember Oleg Nikolov's image 'Bagpiper' in last month's gallery. In this issue he talks us through his steps to making this whimsical character, from his inspired concept, through modeling and texturing.

BAGPIPER

Software used: ZBrush

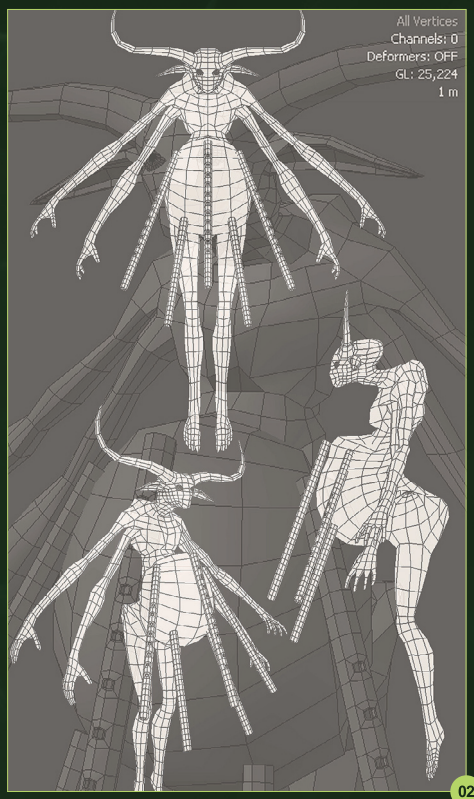
Music has always inspired my art. Maybe because I play with a band in my spare time, or maybe because there is a connection between the different arts. When I play music, I take a break from 3D and also use the time to recharge my creative batteries. I received my first acoustic guitar as a gift when I was 12 years old.

In the image *Bagpiper* I wanted to create a fantasy creature that is a mixture between a musical instrument and a wood nymph. It is part of a series of images inspired by music. The instrument is a pipe; it's very well known in Bulgarian folklore and is often used by the musicians here. I wanted the instrument to have more pipes than the original because the creature has more hands. Having multiple pipes helps to provoke the viewer's imagination until they can "hear" the indescribable melody he is playing. The creature is a keeper of the forest; it communicates with the forest spirits, calling them with his pipe and bells, and they dance their magic ring dance around him...

In the beginning of serious 3D work it is always good to make some preparations, such as finding good reference images for the anatomy, specific types of dress, armor or adornments etc. It's important to make a rough sketch that explains the silhouette of the character, and some specific anatomical characteristics to check the composition and light. It's not necessary for the sketch to be very accomplished; it's enough to be explanatory for the artist himself (**Fig.01**).

01

For the modeling part, I usually start with DynaMesh or ZSpheres in ZBrush, but in this case I started with creating a base mesh in Luxology modo. This is my favorite software for poly modeling at the moment.



02

I used the standard tools. I started by creating a box, and after that I used the Edge Extend, Edge Slice and Bridge tools, then drag, weld and merge. I really like the Flex tool, the different action centers, the falloffs and mesh cleanup. In modo it is not necessary to create an instance or reference a copy of the mesh to work symmetrically. Even if the symmetry is broken I can easily fix it with the Symmetry tool. Modo also has great sculpting tools that I use very often (**Fig.02**).

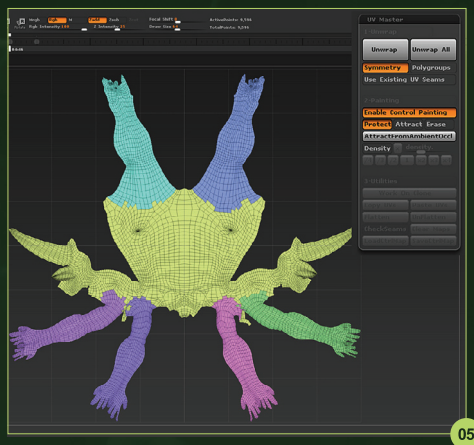
For the sculpting I used Pixologic ZBrush. My favorite brushes are Clay, Inflate, Pinch, Damien Standard and Polish. I always try to reach maximum detail on the lower geometry resolution, and after that subdivide and go to the next level. This way, the sculpting is much cleaner and easier, and it also spares my computer resources. In ZBrush I extracted the bracelets from the base mesh. At the final stage of the sculpting my model was about 2,250,000 polygons (**Fig.03**).


03

ZBrush offers a very handy way for posing your characters: the Transpose Master. It's very easy to mask a part from the mesh by holding the Ctrl key down whilst dragging the Rotate, Move or Scale canvas gyros. After clicking once with the left mouse button and Ctrl key, press on part of the mask to blur it, which also creates a soft transition in the deformation of the mesh. This is much easier than building a complicated rig in some of the standard 3D software.

However, in this project the idea was to create a still image, not an animation, so building a complicated type of rig wasn't necessary. Maybe someday I will create a short animation with this model and I will build a rig for it, who knows (**Fig.04**).

04



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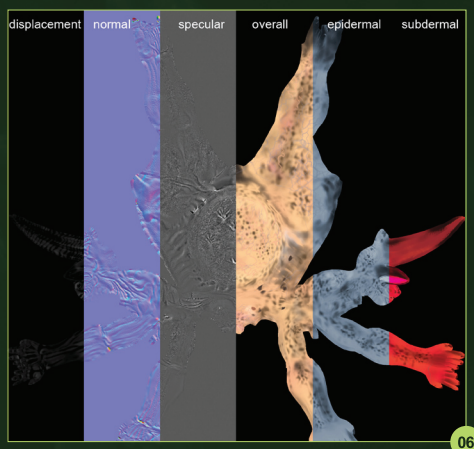
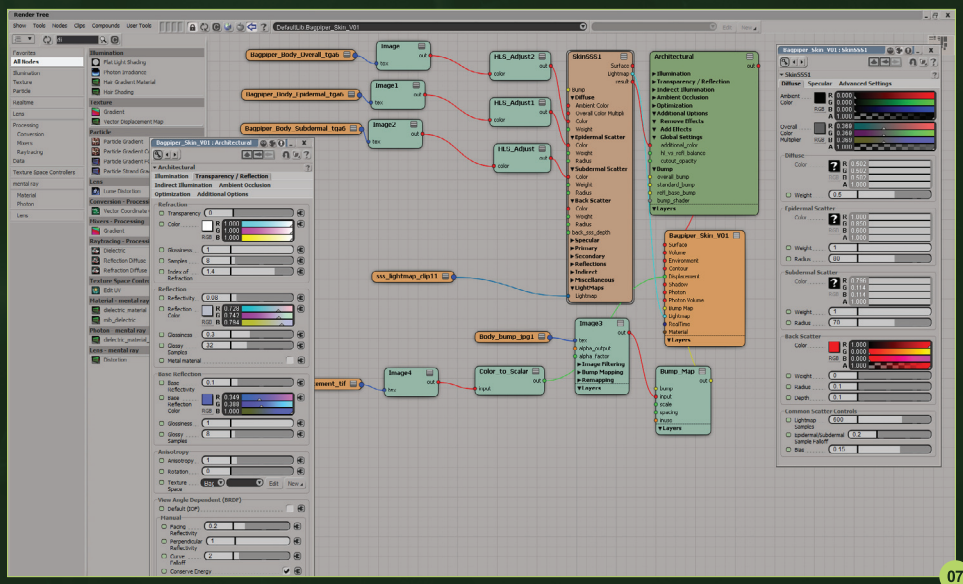


06

Before starting to paint the textures I unwrapped the model in ZBrush using the UV Master plugin. It's very cool, offering a solution in a few clicks (I remember the old days when the unwrapping process took an entire week and you had to move the vertexes by hand in the UV window, trying to prevent stretchiness in the textures... it was a real nightmare) (**Fig.05**).

When the model's unwrap was done, I started to paint the textures in ZBrush using Polypaint. When this was completed I extracted Color, Normal, Cavity and Displacement maps, then flipped them in the Z axis before exporting.

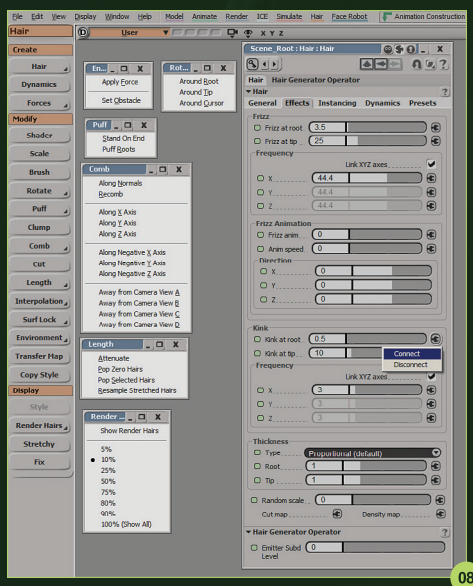


07

In Photoshop I mixed these maps to create different textures for the mental ray skin material, for the overall, epidermal and sub dermal color of the skin (**Fig.06**).

I imported the bagpiper and the butterflies into Autodesk Softimage to continue the project. For the bagpiper I used a skin and architectural shader (**Fig.07**).

The hairs on the model are a mixture between the built-in Softimage hair system and over-painting in Photoshop. Most of the hair properties can easy be controlled via vertex or texture maps, which is very handy. There are also very good tools for modifying and styling the hairs (**Fig.08**).

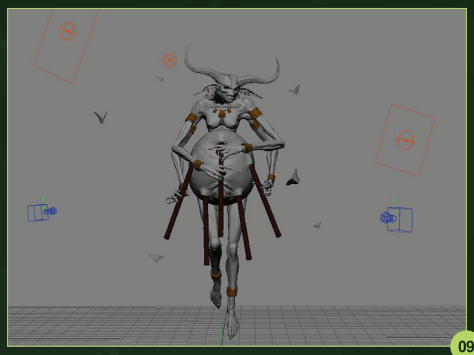


08

The lighting consists of key, fill and back lights, plus mental ray Final Gather. I also rendered the volume light and particles, so that the image could look realistic and at the same time fantastic (**Fig.09**).

I rendered everything in different passes in order to make color corrections in Photoshop easily. I combined them on different blending modes, then added the volume light, particles, glows, color grain, etc (**Fig.10**). In order to create the environment I found different images of trees and forests on the internet, combined and blurred them.

This is the final look with all the layers of the character combined together, plus the background and color correction (**Fig.11**).



09

10

Oleg Nikolov

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This month we feature:

"Goblin Library"

BY MARTHIN AGUSTA

The following shots of the “Goblin Library” book pages are featured here in full-resolution and can be read by zooming in...

Goblin Library

By Marthin Agusta

Job Title: Character Artist

Software Used: 3ds Max, ZBrush and Photoshop

Ideas

Fairies have always been a very interesting subject for me. I have been influenced and inspired by many movies and books, including the Harry Potter and The Spiderwick Chronicles series, as well as artists like J.B Monge, who creates artwork with a common theme.

In this personal work, I tried to create my own interpretation of a goblin. I didn't want to make the usual green, evil, mischievous little creature, but instead wanted it to be a more intelligent and smart creature, perhaps with a grumpy attitude. As an environment, I chose a library because I thought it was suitable for this character. I tried to make it feel old and mysterious by incorporating a lot of old books and setting the light to support the mood. I always generate a list of ideas for every image I do. I write down every detail I want to include in the scene and from this list I then make a simple sketch to serve as a modeling guide. Sometimes I also attach a few reference images to support the design (**Fig.01**).


01

Modeling

I started by using one of my older head meshes from a previous work, and then began to tweak the topology and shape. This mesh acted as just a base, so I didn't really finalize the shape at this point. After modifying this mesh, I exported it into ZBrush. I generally use the Move and Standard brushes, with Symmetry


02

activated, to adjust the proportions. At some point, I turned off Symmetry to create the expression. It is nice to have an unsymmetrical face as it helps the head to look more natural and believable (**Fig.02**).

I also started to decide on his outfit and accessories; in this case I gave him glasses and a pipe to add more character. As the sculpt progressed I added more and more detail. I searched the internet for references of old men's faces and wrinkles, just to have a clear picture. Of course I did not create a realistic human and so exaggerated some features to make it more interesting.

For the body, I just followed the previous design. Like the head, I modeled the base mesh first and then tweaked it in ZBrush to add the folds and creases. I also added some extra props like the pocket watch (**Fig.03**).

After all the modeling was done, I decided to pose him in ZBrush. Using Transpose Master is a really fast way to pose your model and since my goal was to make a still image, this was good enough. I also placed a big book in his left hand, and a pipe in the other (**Fig.04**).

I then added an owl to accompany the goblin and, as usual, I gathered some references from the internet and again started from the base mesh. I tried to finalize the modeling in 3ds Max and after that I generated the UV maps, and created the textures. The owl texture was hand-painted using real owl references. Sculpting was the last step, which didn't involve much detail. I tried to follow the flow of the feathers to match the texture (**Fig.05**).


03


04


05


06


07

Since the goblin is holding quite a big book, I also tried to put some detail into it. The front cover and pages were my main focus, since they would be quite visible in the final shot. Once again ZBrush was used to add the details. For the cover, I simply created an alpha in Photoshop, which was later sculpted into the mesh to add some depth (**Fig.06**).

Texturing

The texturing part was quite straightforward. The skin used an SSS shader, so I required four different maps: Diffuse, Subdermal, Normal and Specular. The Normal map was baked from ZBrush, whilst the others were painted in Photoshop. Here's how the Diffuse and Specular maps look (the subdermal is not shown, but it's just a reddish version of the Diffuse map) (**Fig.07**).

After finishing all the textures, I moved onto the beard. I used 3ds Max Hair and Fur, the reason being it's easy to apply and is supported by mental ray. The main disadvantage is the render time, which is increased significantly. One thing to bear in mind when using this is to set the hair renderer into “mr prim” in the Effects menu, otherwise the render will not look good (**Fig.08 – 09**).


08

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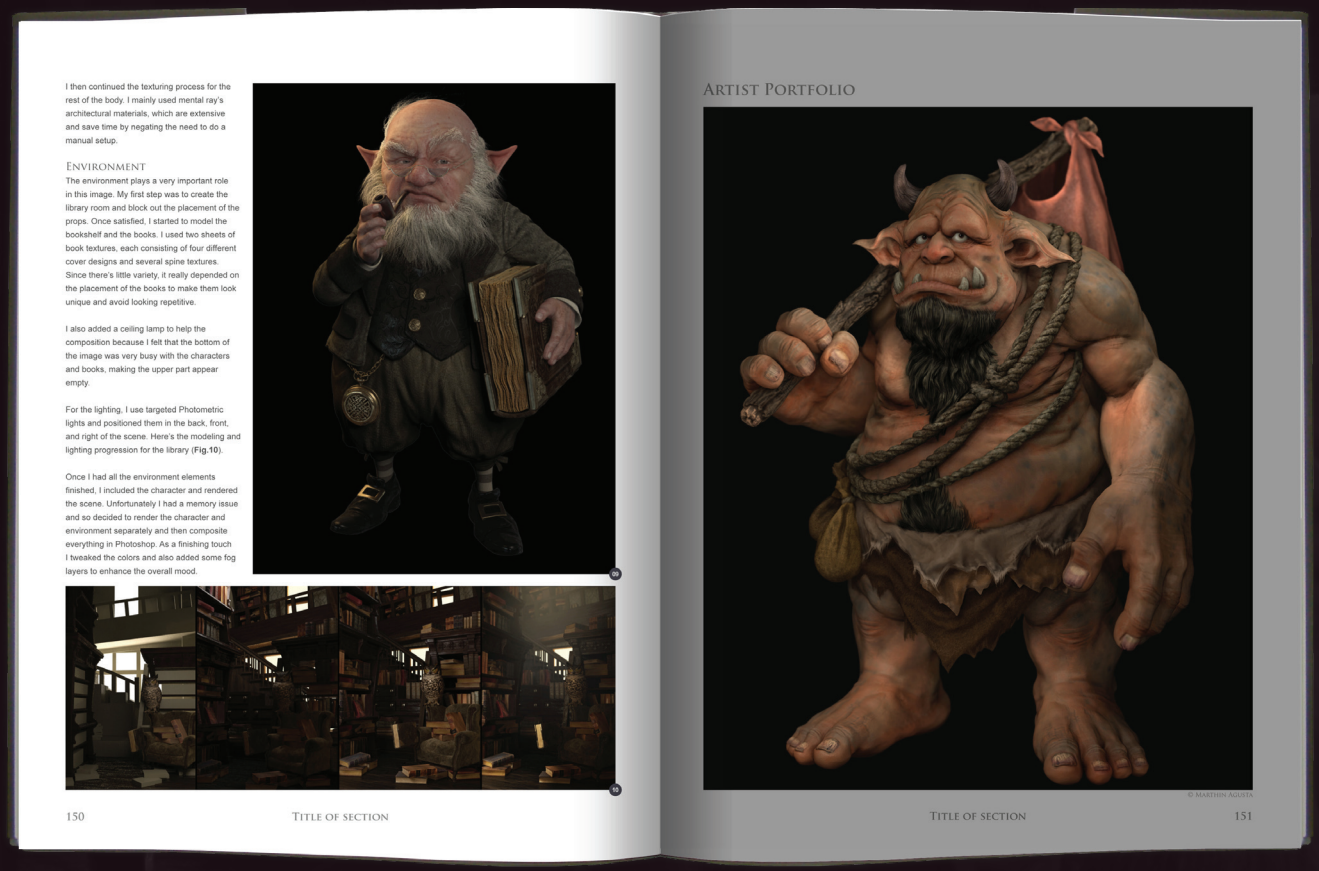

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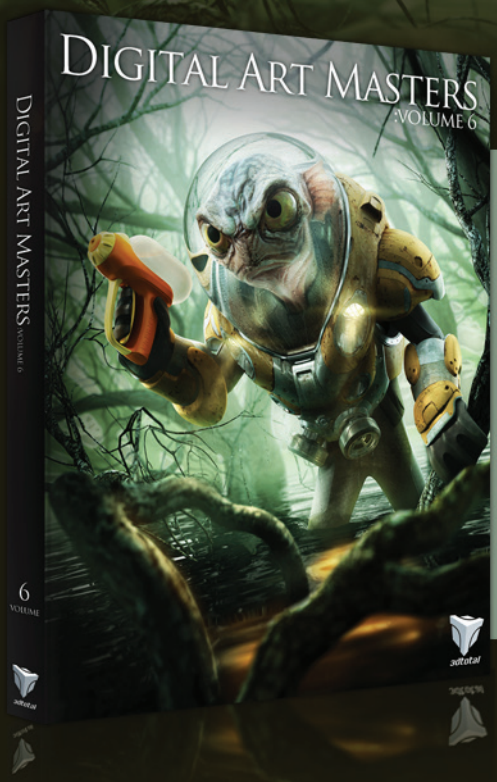

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